Table of Contents

As confidentially submitted to the Securities and Exchange Commission on December 19, 2019
This draft registration statement has not been filed publicly with the Securities and Exchange Commission, and all information herein remains strictly confidential.

Registration No. 333-

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM S-1
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

Progenity, Inc.
(Exact name of registrant as specified in its charter)

Delaware	8071	27-3950390
(State or other jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification Number)

4330 La Jolla Village Drive, Suite 200
San Diego, CA 92122
(855) 293-2639
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Harry Stylli, Ph.D.
Chairman and Chief Executive Officer
Progenity, Inc.
4330 La Jolla Village Drive, Suite 200
San Diego, CA 92122
(855) 293-2639
(Name, address, including zip code, and telephone number, including area code, of agent for service)

With copies to:

Michelle Hodges **Ryan A. Murr** **Branden C. Berns** **Gibson, Dunn & Crutcher LLP** **3161 Michelson Drive** **Irvine, CA 92612-4412** **(949) 451-3954**	**Clarke Neumann** **General Counsel** **Progenity, Inc.** **4330 La Jolla Village Drive, Suite 200** **San Diego, CA 92122** **(855) 293-2639**	**B. Shayne Kennedy** **Michael E. Sullivan** **Chris G. Geissinger** **Latham & Watkins LLP** **650 Town Center Drive, 20th Floor** **Costa Mesa, California 92626** **(714) 540-1235**

Approximate date of commencement of proposed sale to the public: As soon as practicable after this registration statement becomes effective.

If any of the securities being registered on this form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box. ☐

If this form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☐
		Emerging growth company	☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act. ☐

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Proposed Maximum Aggregate Offering Price(1)(2)	Amount of Registration Fee
Common Stock, par value $0.001 per share	$	$

(1) Estimated solely for purposes of calculating the registration fee in accordance with Rule 457(o) under the Securities Act of 1933, as amended.
(2) Includes the additional shares that the underwriters have the option to purchase from the registrant. See "Underwriting."

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the registration statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to such Section 8(a), may determine.

EXPLANATORY NOTE

Pursuant to the applicable provisions of the Fixing America's Surface Transportation Act, we are omitting our consolidated financial statements (and related financial information) for the year ended December 31, 2017 because they relate to historical periods that we believe will not be required to be included in the prospectus at the time of the contemplated offering. We intend to amend the registration statement to include all financial information required by Regulation S-X at the date of such amendment before distributing a preliminary prospectus to investors.

Table of Contents

The information in this prospectus is not complete and may be changed. These securities may not be sold until the registration statement filed with the Securities and Exchange Commission is declared effective. This prospectus is not an offer to sell nor does it seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

Subject to completion, dated , 2020

progenity®

Shares

Common Stock

$ per share

We are offering shares. This is our initial public offering and no public market currently exists for our shares. We anticipate the initial public offering price will be between $ and $ per share. Our proposed Nasdaq Global Market trading symbol is "PROG."

This investment involves risk. See "Risk Factors" beginning on page 15.

We are an "emerging growth company" as defined under the federal securities laws and, as such, may elect to comply with certain reduced public company reporting requirements in future reports after the completion of this offering. See "Prospectus Summary—Implications of Being an Emerging Growth Company."

	Per Share	Total
Initial public offering price	$	$
Underwriting discount(1)	$	$
Proceeds, before expenses, to Progenity, Inc.	$	$

(1) See "Underwriting" beginning on page 182 for additional information regarding underwriting compensation.

The underwriters have a 30-day option to purchase up to additional shares of common stock from us at the initial public offering price less the underwriting discount.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved the securities described herein or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The underwriters expect to deliver the shares of common stock to our investors on or about , 2020.

The date of this prospectus is , 2020.

TABLE OF CONTENTS

We have not, and the underwriters have not, authorized anyone to provide you with information other than that contained in this prospectus or in any free writing prospectus we may authorize to be delivered or made available to you. We take no responsibility for and cannot provide any assurance as to the reliability of any other information others may give you. We are not, and the underwriters are not, making an offer to sell shares of our common stock in any jurisdiction where the offer or sale is not permitted. The information in this prospectus or any free writing prospectus is accurate only as of its date, regardless of its time of delivery or of any sale of shares of our common stock. Our business, financial condition, results of operations, and prospects may have changed since that date.

For investors outside the United States: We have not, and the underwriters have not, done anything that would permit this offering, or possession or distribution of this prospectus, in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside of the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the shares of our common stock and the distribution of this prospectus outside of the United States.

PROSPECTUS SUMMARY

This summary highlights selected information contained elsewhere in this prospectus. This summary does not contain all of the information that you should consider before deciding to invest in our common stock. You should read the entire prospectus carefully, including "Risk Factors," "Management's Discussion and Analysis of Financial Condition and Results of Operations," and our financial statements and notes to those financial statements included elsewhere in this prospectus, before making an investment decision. Some of the statements in this summary constitute forward-looking statements, see "Special Note Regarding Forward-Looking Statements." In this prospectus, unless the context requires otherwise, references to "we," "us," "our," "Progenity" or the "company" refer to Progenity, Inc. and, where appropriate, its subsidiaries. Additionally, references to "Board" refer to the board of directors of Progenity, Inc.

Our Company

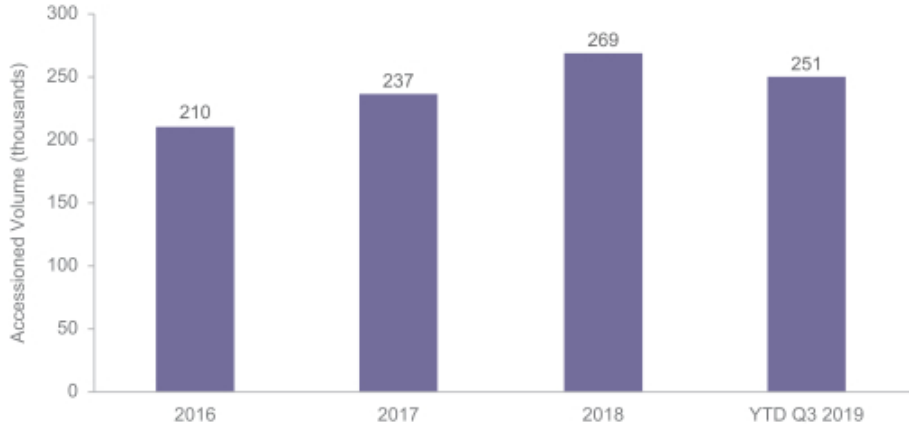
We are a biotechnology company with an established track record of success in developing and commercializing molecular testing products as well as innovating in the field of precision medicine. We believe that we are a market-leading provider of *in vitro* molecular tests designed to improve lives by providing actionable information that helps guide patients and physicians in making critical and timely medical decisions during various life stages, such as family planning, pregnancy, or navigating a complex disease diagnosis. Our vision is to transform healthcare to become more precise and personal by improving diagnoses of disease and improving patient outcomes through localized treatment with targeted therapies. We apply a multi-omics approach, combining genomics, epigenomics, proteomics, and metabolomics, to our molecular testing products and to the development of a suite of investigational ingestible devices and drug/device combinations designed to provide precise diagnostic sampling and drug delivery solutions.

Since 2010, our molecular testing business has achieved consistent year-over-year test volume growth through our robust product portfolio and our strong commercial organization. Our internal core competencies, deep research and development pipeline and strategic acquisitions of novel technologies have fueled our innovation in women's health, supporting the development and launch of complementary molecular testing products that inform critical healthcare decision-making across a woman's lifetime.

In 2015, we launched both our Innatal Prenatal Screen, a Non-Invasive Prenatal Testing, or NIPT, offering, and our Preparent Carrier Test, followed by the launch of our Riscover Hereditary Cancer Test in 2017. These molecular testing products collectively address a combined market of more than $2.5 billion in the United States alone. We offer molecular tests with market-leading performance and turnaround times, supported by end-to-end workflow solutions that increase administrative efficiencies. Along with our comprehensive menu of molecular tests, we offer patients pre-test education, clear and timely results, and on-demand genetic counseling. We are committed to providing patients and physicians with empathetic communication and support during critical moments to help empower and prepare patients and their families to make critical life decisions.

Since our inception, we have accessioned more than 1.3 million tests in the United States and the growth rate of our test volume is accelerating. The figure below shows our test volume growth from 2016 through the third quarter of 2019.

Test Volume Growth



Our commercial team of more than 150 individuals actively engages with physicians and their staff to emphasize the clinical need for our products, educate them on clinical value, and facilitate their ability to order our molecular tests. We place special emphasis on our customers' needs and journey with their patients. We ensure they are fully equipped with all the tools they need to discuss and educate their patients about the benefits of NIPT, carrier screening, and hereditary cancer screening, and also provide the added confidence that our genetic counselors are there to support them when needed.

We continue to innovate to drive the clinical and competitive differentiation of our molecular tests. For example, our next generation Innatal Prenatal Screen is designed to provide the same highly reliable results but with a faster turnaround time and at a much lower cost to us.

We are developing a rule-out test for preeclampsia. Annually, approximately one million pregnant women in the United States experience signs and symptoms that could be attributed to preeclampsia, which can cause serious, even fatal, complications for both mother and baby. Preeclampsia is the second most common cause of maternal death worldwide and is currently diagnosed by observing risk factors and common symptoms, such as high blood pressure, rather than diagnosing the actual condition itself. This approach often leads to false positive diagnoses and provides limited clinical utility, which can each lead to unnecessary hospitalizations and medical costs. We are developing a test that we believe has the potential to address these shortcomings by ruling out the condition itself (rather than merely detecting its symptoms) through testing for certain biomarkers. We believe that identifying non-preeclamptic pregnancies would improve patient outcomes while lowering the cost burden of preeclampsia to the U.S. healthcare system, estimated to be approximately $1.03 billion for mothers and $1.15 billion for infants annually. We believe the total addressable market for our preeclampsia test is approximately $3.0 billion per year in the United States alone.

We believe our future success will be driven by continued capture of market share by our molecular testing business and new revenue streams resulting from our diversified product development pipeline, both within and beyond women's health. Our core expertise in complex assay development, bioinformatics, and scalable commercial laboratory operations lends itself to a variety of potential applications. We are also developing a

novel pipeline of precision medicine product candidates designed to provide solutions for gastrointestinal, or GI, disorders. This pipeline includes both diagnostic applications, targeted drug delivery in the GI tract at the site of disease, and the oral delivery of biologics. We believe these product candidates, if successfully developed, have the potential to address unmet healthcare needs by more precisely identifying and treating chronic GI diseases, such as small intestinal bacterial overgrowth, or SIBO, and inflammatory bowel disease, or IBD.

Our Strengths

We attribute our commercial success and future growth prospects to the following:

- ***A leading molecular testing business with clinical and competitive product advantages***. Our products are built on a foundation of molecular genetic expertise, excellence in bioinformatics, and dedication to women's health and reproductive medicine. We have built a robust product portfolio through efficient in-house development, clinical laboratory partnerships, and strategic acquisitions. Our tests have achieved market-leading reliability and performance benchmarks within their respective market categories.
- ***Integrated product offering***. We offer integrated molecular tests and end-to-end support services that enable physicians to seamlessly incorporate genetic testing into their office workflow and offer the convenience of ordering multiple tests from one source. Our workflow solutions customize the experience of working with us for a range of physician practice sizes and capabilities, lowering barriers to adoption of genetic testing. We also utilize a specialized team dedicated to integrating our systems with our healthcare providers' electronic medical record, or EMR, systems, opening bidirectional connectivity to streamline test ordering and reporting. We deliver easy-to-understand results and our customer support services provide convenient access to board-certified genetic counselors. We believe that these services collectively create substantial value and lead to customer loyalty.
- ***Breadth and depth of R&D capabilities driving breakthrough innovation***. We have built a first class research and development, or R&D, organization capable of harnessing and translating novel technologies into innovative platforms and product solutions as we strive to remain at the forefront of customer needs. Our technical expertise along the product development spectrum includes assay design, bioinformatics, and analytical and clinical validation and enables us to leverage existing knowledge to solve new challenges.
- ***Precision medicine platform targeting a large, underserved market***. We are developing an innovative and potentially scalable product platform that we believe will support the advancement of our precision medicine pipeline. This platform approach is based on an innovative capsule, which we believe could represent a paradigm shift from existing diagnostic and therapeutic approaches. We believe this platform has the potential to address significant unmet medical needs in the GI space, including the challenges in diagnosing, treating, and monitoring diseases without the repeated use of invasive procedures, such as upper GI endoscopies, colonoscopies, and biopsies.
- ***Comprehensive intellectual property portfolio***. We have retained worldwide rights to our internally-developed and acquired molecular testing and precision medicine technologies. We hold over 400 issued and pending patents that include claims that are directed to a range of molecular testing and precision medicine-related methods, systems, and compositions surrounding our suite of current and future products. In addition, we believe that our trade secrets and other know-how provide additional barriers to entry.
- ***Proven leadership with industry expertise***. Our senior management team and board of directors consist of veteran biotechnology and molecular testing professionals with deep industry experience. These individuals have extensive experience with numerous well-regarded biotechnology and diagnostic companies. Through their many years of experience, they have developed strong relationships with key thought leaders and medical societies.

Our Strategy

Our vision is to build upon our expertise and core competencies in molecular testing to transform healthcare to become more precise and personal in our existing markets as well as in new developmental fields such as ingestible diagnostics and targeted therapeutics. To realize our vision, we intend to:

- ***Expand market opportunity for our existing molecular tests***. We believe there is a significant opportunity to expand and further penetrate the markets for each of our existing molecular tests. We intend to accomplish this by working with industry groups and payors to increase payor policy coverage, educating patients, physicians, and payors on the clinical utility of our tests, and highlighting the cost efficiency and time savings provided by our tests and workflow solutions.
- ***Leverage our robust R&D capabilities to drive breakthrough innovation***. We seek to combine innovation with the technologies underlying our existing platforms to disrupt the current diagnostics and treatment paradigms. Through our robust research and development pipeline, we seek to unlock novel approaches that will drive improvement of patient outcomes in prenatal and perinatal medicine, gastroenterology, and oncology, increase the precision of medical research and diagnosis through ingestible sampling technologies, and create a new category of treatment options through proprietary drug/device combinations.
- ***Continue to expand and strengthen our direct sales force***. We believe that our specialized sales force is key to educating our customers about the clinical need for our molecular tests and our end-to-end workflow solutions. We are continuously optimizing market coverage of our highly qualified sales force and identifying new growth opportunities using a customized and targeted account profiling and messaging approach that better reflects our value proposition.
- ***Enhance our customer support services***. Our goal is to be a trusted and valued partner to our customers by delivering market-leading test performance and service to further integrate genetic testing into their workflow. We intend to expand upon our Progenity Partnerships program, our proprietary customer support services platform, to further streamline patient identification and selection for testing and enhance our customized physician and patient management initiatives. In addition, we intend to expand upon our patient management tools, which streamline and enhance the patient experience, including patient education, payor pre-authorization, easy-to-read test results, and access to genetic counselors.
- ***Develop and commercialize a disruptive precision medicine platform of GI diagnostics and therapeutics***. Our precision medicine platform is focused on addressing an unmet medical need of patients with GI disorders or related diseases. Leveraging an autonomous localization technology, we are developing a noninvasive, ingestible capsule platform, with investigational devices and drug/device combinations designed for both diagnostic and therapeutic purposes. We believe our product candidates, if successfully developed and approved or cleared, could become the first precision medicine products to diagnose and treat at the site of the disease within the GI tract. Ultimately, we intend to pursue commercialization of such product candidates ourselves or via strategic partnership upon their approval or clearance.

Our Molecular Tests

We have developed proprietary, low-cost, high-throughput platforms for our Innatal, Preparent, and Riscover molecular testing products. Our platforms exploit proprietary developments in a number of key molecular biology applications, bioinformatic algorithms, and innovative clinical reporting. Our assay platforms are designed to deliver increased performance at lower costs compared to alternative methods and have a flexible architecture, designed to allow for rapid product development iteration cycles with best in class performance.

Our molecular tests provide accurate, reliable, and fast test results while simplifying ordering, pre-test education, processing, testing, reporting, counseling, and billing for physicians and patients. We currently offer tests with clinical utility that enable physicians to deliver clinical decision support for, and address the medical needs of, patients and their families. We complement these tests with our proprietary suite of end-to-end workflow solutions, enabling us to educate physicians, patients, and payors on the benefits and clinical utility of genetic testing. In addition, we offer physicians the convenience of ordering multiple tests from one source, integrate our services seamlessly into their practices, and deliver easy-to-understand results and genetic counseling support.

We own and operate a licensed Clinical Laboratory Improvement Amendments, or CLIA, and College of American Pathologists, or CAP, certified laboratory located in Ann Arbor, Michigan specializing in the molecular testing market serving women's health providers in the obstetric, gynecological, fertility, and maternal fetal medicine specialty areas in the United States. Distribution is managed by a dedicated sales force and a field operations team who support all logistical functions in receiving clinical samples to the laboratory for analysis. Through our affiliation with Mattison Pathology, LLP, a Texas limited liability partnership doing business as Avero Diagnostics, located in Lubbock and Dallas, Texas, our operations have expanded to provide anatomic and molecular pathology tests in the United States.

We support patients and physicians during patients' critical life decisions with our current suite of high-quality molecular tests:

- **Innatal Prenatal Screen:** A noninvasive prenatal test offered to women early in pregnancy to screen for risk of fetal chromosomal conditions, such as Down syndrome, trisomy 13, and trisomy 18, and sex chromosome disorders
- **Preparent Carrier Test:** An expanded carrier screen that is performed on women or couples before conception or early in a pregnancy to identify if they carry certain mutations that cause genetic diseases
- **Riscover Hereditary Cancer Test:** A hereditary cancer screen that looks for genetic mutations associated with elevated risk for certain hereditary cancers in an asymptomatic patient
- **Resura Prenatal Test for Monogenic Disease:** A test for monogenic diseases that is the first commercially available, custom-designed solution for families at-risk for rare diseases
- **Anatomic and Molecular Pathology Tests:** A broad portfolio of anatomic and molecular pathology tests and specialized genetic tests we offer through Avero Diagnostics

Our Product Candidates in Development

Next Generation Innatal Prenatal Screen

We are developing a proprietary single molecule DNA counting assay utilizing advanced optics with custom chemistry and molecular biology that we believe will represent a substantial improvement to our existing Innatal platform, with simplified and more cost-effective assay workflow resulting in the same high clinical quality and reliability but with an up to 50% reduction in turnaround time and a substantial reduction in cost of goods sold for our NIPT. We have completed the feasibility assessment for this test and are in the process of completing the optimization process. If successfully developed, we currently anticipate a commercial launch of this product in the first half of 2021.

Preeclampsia Rule-Out Test

Preeclampsia is a hypertensive condition of pregnancy involving multiple pathways that usually occurs in the second half of pregnancy. According to the Preeclampsia Foundation, preeclampsia occurs in 5% to 8% of pregnancies in the United States and is one of the leading causes of premature birth and maternal and neonatal

morbidity and mortality. The current standard of care evaluations for preeclampsia are often inconclusive and inaccurate. The only consensus treatment for preeclampsia is delivery of the baby, regardless of gestational age, which results in unnecessary hospital admissions, preterm births, and additional healthcare costs. Suspected preeclampsia before 37 weeks of gestation often results in preterm birth complications, thus a rule-out test with high negative predictive value for preeclampsia could provide the extra days and weeks of gestational development which are critical for positive infant health outcomes. While positive predictive testing is believed by some companies to be beneficial, the 2019 ACOG bulletin on gestational hypertension and preeclampsia stated that due to the relatively low positive predictive values (8% to 33%) of diagnostic tools, those tools cannot predict preeclampsia and should remain investigational. Our preeclampsia rule-out test is not diagnostic, as it is designed to rule out (exclude) the disorder and rely on a high negative predictive value, or NPV, to provide physicians and other care givers with a novel adjunctive laboratory assessment to manage patients suspected of having preeclampsia. Superimposed preeclampsia is often indistinguishable from chronic and gestational hypertension, which are treated and managed differently; and therefore must be differentiated from true preeclampsia to avoid unnecessary preterm births.

To address this problem, we are developing a proprietary proteomics platform to support novel clinical tests focused on the quantitative measurement of multiple proteins. This multi-analyte platform is designed to detect complications and diseases manifesting from multiple complex biological pathways to provide insight into disease progression and to assist in clinical management. The platform is built on automated instrumentation, which is a Class I, 510(k) exempt device commonly found in clinical laboratories, which we believe will enable expansion of the platform into multiple clinical sites. We have developed reagents, including high affinity and specific antibodies, which we believe will deliver a differentiating platform focused on performance, sensitivity, and specificity.

Through this proteomics platform, we are developing a noninvasive, high sensitivity, multi-analyte blood-based test designed to assist in the clinical assessment and medical care decision-making process of physicians who care for pregnant women presenting with signs and symptoms of preeclampsia between 28 to 37 weeks of gestational age. We believe a risk assessment test that exhibits high NPV could provide a significant improvement in the ability to manage preeclampsia by ruling out the active condition, thereby obviating the cost and risk of further diagnosis and treatment in high-cost settings. We believe our preeclampsia test, if successfully developed, will have the potential to impact the cadence and amount of patient visits and timing of indicated delivery, potentially saving the healthcare system money while also improving patient care for both mother and baby. By designing the test to have high sensitivity and NPV rates, we expect the test, if and when offered, to be well suited to complement existing tools already part of the current standard of care, giving clinicians an additional strong, objective tool with which to better manage hypertensive disorders during pregnancy. We have secured the clinical validation set for this test and are in the process of completing the optimization process. If successfully developed, we anticipate a targeted commercial launch of this product in the second half of 2020.

Precision Medicine for GI-Related Disorders

We are also developing a proprietary ingestible capsule platform designed to help diagnose and treat GI disorders at the site of disease, with the goal of addressing significant unmet needs and supporting affected patient populations by improving patient outcomes through precision medicine. Our investigational capsules are being developed for both diagnostic and therapeutic applications in disorders such as SIBO and inflammatory disorders, such as IBD. Our precision medicine development pipeline includes:

Recoverable Sampling System (RSS)	An ingestible capsule designed to enable the collection, preservation, and analysis of samples from previously inaccessible parts of the small intestine ***First clinical trial expected in 2020***
Progenity Ingestible Laboratory Diagnostics (PIL Dx)	An ingestible capsule with an on-board laboratory designed to collect and analyze intestinal fluid samples in transit through the intestine, transmitting analysis data to a wearable device, with no ingestible device recovery needed and no sample to send to the laboratory ***Pilot clinical study expected in 2020***
Drug Delivery System (DDS)	Investigational drug/device combinations designed to deliver drug directly to the site of disease in the GI tract in an effort to improve efficacy while limiting toxicities caused by systemic exposure ***In pre-clinical proof-of-concept stage***
Oral Biotherapeutic Delivery System	A next generation, low-cost investigational drug/device combination designed to deliver biologics systemically, via a more convenient oral route of administration rather than the currently used intravenous or subcutaneous injections ***In pre-clinical proof-of-concept stage***

Our approach is founded on the development of innovative technologies that are designed to diagnose and treat at the site of the disease. Using this platform, we intend to develop diagnostic and therapeutic solutions for a broad range of disorders, but our initial focus is on SIBO and inflammatory disorders such as IBD. These disorders are difficult to treat due to the challenges in diagnosing these conditions and monitoring the treatment response without the repeated use of invasive procedures such as upper GI endoscopies, colonoscopies, and biopsies. From the therapeutic perspective, the most effective approved therapies for IBDs such as ulcerative colitis and Crohn's disease, are currently potent immunomodulatory drugs such as Humira and Xeljanz. Unlike the efficacy seen with other immunological disorders such as rheumatoid arthritis and psoriasis, we believe the efficacy of these potent agents for IBD is suboptimal. This can partly be explained by the inadequate bioavailability of the drug in the GI tract when administered by traditional oral capsules or by injection or infusion, even at high doses and because of the inability to increase dosage due to dose-limiting systemic toxicity. We believe a significant opportunity exists for a device that can diagnose GI-related disorders without an endoscopy or colonoscopy and a device that can deliver drugs in a targeted manner directly to the site of disease.

Our precision medicine product platform is based on our own multi-disciplinary research developed over the last five years and also in-licensed and acquired intellectual property from Medimetrics. Three of our four ingestible medical device product candidates utilize autonomous localization technology. This technology is designed to enable both diagnostic and therapeutic capsule types to autonomously determine their location within the GI tract. The autonomous localization technology is based on a proprietary LED light and photodetector sensor array that detects reflected light in the GI tract and uses a proprietary algorithm to determine anatomical locations of interest, for example, the pyloric and ileocecal transition. Of note, this technology differs from other GI tract

localization technologies that rely on pH levels and other physiological factors which are not specific and are highly variable and also differs from delayed release drug delivery systems such as pH sensitive capsules and MMX technology. Our PIL Dx capsules are designed to work with a remote radio frequency, or RF, detector device that externally monitors all sensor measurements and can transmit results of GI tract testing. Our core technology is also designed to allow for precise sample collection of intestinal fluids at a predetermined location and analysis in the GI tract. Additionally, certain of the capsules we have under development have temperature sensors that are designed to measure the temperature of the surrounding environment and a microchip oscillator that is designed to keep time.

We have a GI-focused laboratory in Irving, Texas to support our precision medicine platform. We believe that the technologies under development will provide quantitative analysis for the RSS capsule and the PIL Dx capsule, as well as for precision medicine-related studies. The team members located at the laboratory are developing and validating reagents and assays to analyze protein, nucleic acid, metabolite, and bacterial analytes. The assays will be used for a range of nonclinical and clinical studies in conditions including SIBO and IBD, and in oncology.

Risks Associated with Our Business

Investing in our common stock involves significant risks. You should carefully consider the risks described in “Risk Factors” before making a decision to invest in our common stock. If we are unable to successfully address these risks and challenges, our business, financial condition, results of operations, or prospects could be materially adversely affected. In such case, the trading price of our common stock would likely decline, and you may lose all or part of your investment. Below is a summary of some of the risks we face.

- We currently receive and expect to continue to receive a significant portion of our revenues from our women’s health-related NIPT and carrier screening products, and if our efforts to further increase the use and adoption of these products fail, our business will be harmed.
- We have incurred losses in the past, and we may not be able to achieve or sustain profitability in the future.
- We operate in a highly competitive business environment.
- Our success depends on our ability to improve and enhance our current products and develop new product candidates, which is complex and costly and the results are uncertain.
- We are still developing our precision medicine platform and to date have generated no products or product revenue. There can be no assurance that we will develop any precision medicine products that deliver diagnostic or therapeutic solutions, or, if developed, that such product candidates will be authorized for marketing by regulatory authorities, or will be commercially successful. This uncertainty makes it difficult to assess our future prospects and financial results.
- Although we have implemented compliance policies and have an internal audit function, we cannot ensure that our employees will fully adhere to such policies.
- Operating our business will require a significant amount of cash, and our ability to generate sufficient cash depends on many factors, some of which are beyond our control. We expect to need to raise additional capital after this offering, and if we cannot raise additional capital when needed, we may have to curtail or cease operations.
- We may not be able to obtain and maintain the third-party relationships that are necessary to develop, commercialize, and manufacture some or all of our product candidates.
- We rely on a limited number of suppliers or, in some cases, single suppliers, for some of our laboratory instruments and materials and may not be able to find replacements or immediately transition to alternative suppliers.

- We have increased the size of our organization and expect to further increase it in the future, and we may experience difficulties in managing this growth. If we are unable to manage the anticipated growth of our business, our future revenue and operating results may be adversely affected.
- If third-party payors do not adequately reimburse us or our customers for any new products, they might not be purchased or used, which may adversely affect our revenue and profits.
- We may be unable to expand or maintain third-party payor coverage and reimbursement for our Innatal, Preparent, and other tests, or may be required to refund any reimbursements already received.
- If we or our commercial partners act in a manner that violates healthcare laws or otherwise engage in misconduct, we could face substantial penalties and our business operations and financial condition could be adversely affected.
- Third-party claims of intellectual property infringement could result in litigation or other proceedings, which would be costly and time-consuming, and could limit our ability to commercialize our products.

Corporate and Other Information

We were incorporated in Delaware in January 2012 under the name Ascendant MDx, Inc., and we later changed our name in August 2013 to Progenity, Inc. Through our predecessor, Ascendant MDx, a California corporation, we commenced our operations in 2010. Our corporate office is located at 4330 La Jolla Village Drive, Suite 200, San Diego, CA 92122, and our telephone number is (855) 293-2639. Our website is *www.progenity.com*. The information on, or that can be accessed through, our website is not part of this prospectus and is not incorporated by reference herein.

The Progenity logo, "Innatal®," "Preparent®," "Riscover®," "Resura®," and other trademarks, trade names or service marks of Progenity appearing in this prospectus are the property of Progenity, as is the Progenity corporate name. All other service marks, trademarks, and trade names appearing in this prospectus are the property of their respective owners. Solely for convenience, trademarks and trade names referred to in this prospectus appear without the ® and ™ symbols, but those references are not intended to indicate that we will not assert, to the fullest extent under applicable law, our rights, or that the applicable owner will not assert its rights, to these service marks, trademarks, and trade names.

Implications of Being an Emerging Growth Company

We are an emerging growth company, as defined in Section 2(a) of the Securities Act of 1933, as amended, or the Securities Act, as modified by the Jumpstart Our Business Startups Act of 2012, or the JOBS Act, and we may take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including relief from the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended, or the Sarbanes-Oxley Act, less extensive disclosure obligations regarding executive compensation in our registration statements, periodic reports and proxy statements, exemptions from the requirements to hold a nonbinding advisory vote on executive compensation, and exemptions from stockholder approval of any golden parachute payments not previously approved. In particular in this prospectus, we expect to provide only two years of audited consolidated financial statements and have not included all of the executive compensation-related information that would be required if we were not an emerging growth company. As a result, our stockholders may not have access to certain information that they may deem important. We may also elect to take advantage of other reduced reporting requirements in future filings. We could be an emerging growth company for up to 5 years, although circumstances could cause us to lose that status earlier, including if our total annual gross revenues exceed

$1.07 billion, if we issue more than $1.0 billion in non-convertible debt during any three-year period, or if the market value of our common stock held by non-affiliates exceeds $700 million as of June 30 of any year.

In addition, the JOBS Act also provides that an emerging growth company may take advantage of the extended transition period provided in the Securities Act for complying with new or revised accounting standards. An emerging growth company may therefore delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have elected to avail ourselves of this exemption and, as a result, will not be subject to the same implementation timing for new or revised accounting standards as are required of other public companies that are not emerging growth companies, which may make comparison of our consolidated financial information to those of other public companies more difficult.

THE OFFERING

Common stock offered by us	shares.
Option to purchase additional shares of common stock	The underwriters have a 30-day option to purchase up to additional shares of our common stock.
Common stock to be outstanding immediately after this offering	shares (or shares if the underwriters exercise in full their option to purchase the additional shares of our common stock).
Use of proceeds	We expect that our net proceeds from this offering will be approximately $ million, at an assumed public offering price of $ per share (the midpoint of the range set forth on the cover of this prospectus), and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. We intend to use the proceeds of this offering to support our operations, to invest in our research and development pipeline, to pay our obligations under settlement agreements, and for working capital and general corporate purposes. See "Use of Proceeds" for additional information.
Risk factors	You should carefully read and consider the information set forth in "Risk Factors," together with all of the other information set forth in this prospectus, before deciding whether to invest in our common stock.
Proposed Nasdaq Global Select Market symbol	"PROG"

Except as otherwise noted, all share numbers in this prospectus are based on outstanding shares of our common stock (including shares of our preferred stock outstanding on an as-converted basis) as of September 30, 2019, and exclude:

- shares of our common stock issuable upon the exercise of stock options outstanding under our 2011 Incentive Stock Plan, Second Amended and Restated 2012 Stock Plan, 2015 Consultant Stock Plan, and Second Amended and Restated 2018 Equity Incentive Plan, or the 2018 Plan, at a weighted average exercise price of $ per share;
- shares of our common stock that we expect to be issued for vested restricted stock units under our 2018 Plan eligible for settlement on the date on which any restrictions imposed by the underwriters in connection with this offering have expired;
- shares of our common stock reserved for future issuance pursuant to future awards under our 2018 Plan, as well as any automatic increase in the number of shares of common stock reserved for future issuance pursuant to such awards under this plan;
- shares of our common stock to be reserved for future issuance under our 2020 Employee Stock Purchase Plan, which will become effective immediately prior to the completion of this offering, as well as any automatic increase in the number of shares of common stock reserved for future issuance under this plan; and

- shares of our common stock (on an as-converted basis) issuable upon exercise of an outstanding Series B Preferred Stock Purchase Warrant at an exercise price of $ per share.

Except as otherwise noted, we have presented the information in this prospectus based on the following assumptions:

- the conversion, in accordance with our existing sixth amended and restated certificate of incorporation, of all shares of preferred stock outstanding into shares of our common stock, which will occur immediately prior to the completion of this offering;
- the automatic conversion of an outstanding Series B Preferred Stock Purchase Warrant exercisable for shares of our Series B Preferred Stock into a warrant exercisable for shares of our common stock;
- the one-for- reverse stock split of our common stock and a proportional adjustment to the conversion ratio of our preferred stock effected on , 2020;
- no exercise by the underwriters of their option to purchase additional shares of our common stock in this offering;
- no exercise of outstanding stock options or vesting of restricted stock units after September 30, 2019; and
- the filing and effectiveness of our seventh amended and restated certificate of incorporation with the Secretary of State of the State of Delaware, which will occur immediately prior to the completion of this offering. See “Description of Capital Stock—Our Certificate of Incorporation and Our Bylaws.”

SUMMARY CONSOLIDATED FINANCIAL DATA

The following summary consolidated statement of operations data for the years ended December 31, 2018 and 2019 are derived from our audited consolidated financial statements included elsewhere in this prospectus. The following summary consolidated statement of operations data for the nine months ended September 30, 2018 and 2019 and the summary consolidated balance sheet data as of September 30, 2019 are derived from our unaudited interim condensed consolidated financial statements included elsewhere in this prospectus. Our unaudited interim condensed consolidated financial statements were prepared on the same basis as our audited consolidated financial statements and, in our opinion, reflect all adjustments, consisting only of normal recurring adjustments, that are necessary for the fair statement of our unaudited interim condensed consolidated financial statements.

The historical results presented below are not necessarily indicative of the results to be expected for any future period, and our interim results are not necessarily indicative of the results to be expected for the full year or any future period. This information should be read in conjunction with "Risk Factors," "Capitalization," "Management's Discussion and Analysis of Financial Condition and Results of Operations," "Selected Consolidated Financial Data," and our financial statements and the related notes included elsewhere in this prospectus. Our financial statements are prepared in accordance with generally accepted accounting principles in the United States, or GAAP.

	Year Ended December 31,		Nine Months Ended September 30,	
	2018	2019	2018	2019
	(in thousands, except share and per share data)		(in thousands, except share and per share data) (unaudited)	
Revenue	$ 127,974	$	$ 131,979	$ 123,509
Cost of sales	92,076		69,358	75,531
Gross profit	35,898		62,621	47,978
Operating expenses:				
Research and development	48,712		34,230	48,791
Selling and marketing	50,187		36,998	45,510
General and administrative	51,238		38,577	44,823
Total operating expenses	150,137		109,805	139,124
Loss from operations	(114,239)		(47,184)	(91,146)
Interest expense	(9,091)		(6,794)	(6,872)
Equity loss of equity method investee	(2,327)		(932)	—
Interest and other income, net	1,801		1,404	457
Loss before taxes	(123,856)		(53,506)	(97,561)
Income tax expense	5,250		6,255	—
Net loss	$ (129,106)	$	$ (59,761)	$ (97,561)
Dividend paid to preferred stockholders	—		—	(3,652)
Stock dividend on exchange of Series A-1 to Series B Preferred Stock	—		—	(27,637)
Stock dividend on Series B Preferred Stock	—		—	(13,137)
Net loss attributable to common stockholders	$ (129,106)	$	$ (59,761)	$ (141,987)
Net loss per share attributable to common stockholders, basic and diluted	$ (4.49)	$	$ (2.07)	$ (4.74)
Weighted average number of shares outstanding, basic and diluted	28,773,598		28,834,005	29,973,919
Pro forma loss per share, basic and diluted (unaudited)(1)	$ (0.84)	$	$ (0.39)	$ (0.90)
Pro forma weighted average shares outstanding, basic and diluted (unaudited)(1)	154,289,598		154,350,005	157,862,753

(1) See Notes 2 and 11 to our audited consolidated financial statements and Notes 2 and 12 to our unaudited condensed consolidated financial statements included elsewhere in this prospectus for an explanation of the method used to calculate our net loss per share attributable to common stockholders, basic and diluted; pro forma net loss attributable to common stockholders, basic and diluted; and the weighted average shares used in the computation of these per share amounts.

	As of September 30, 2019		
	Actual	Pro Forma(1)	Pro Forma As-Adjusted(2)
		(in thousands) (unaudited)	
Selected Balance Sheet Data:			
Cash and cash equivalents	$ 26,050	$	$
Total assets	96,101		
Total indebtedness(3)	71,903		
Total liabilities	185,168		
Preferred stock	67	—	
Accumulated deficit	(261,638)	(261,638)	
Total stockholders' deficit	(89,067)	(89,067)	

(1) The pro forma column reflects the conversion, in accordance with our existing sixth amended and restated certificate of incorporation, of all shares of preferred stock outstanding into shares of our common stock, which will occur immediately prior to the completion of this offering.

(2) The pro forma as-adjusted column reflects $ million in proceeds from the issuance and sale of shares of our common stock in this offering, based on an assumed public offering price of $ per share (the midpoint of the range set forth on the cover of this prospectus) and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. Each $1.00 increase (decrease) in the assumed public offering price would increase (decrease) the pro forma as-adjusted amount of each of cash and cash equivalents, total assets, accumulated deficit, and total stockholders' deficit by $ million, assuming that the number of shares offered by us, as set forth on the cover of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Each increase (decrease) of 1,000,000 shares in the number of shares offered by us, as set forth on the cover of this prospectus, would increase (decrease) the pro forma as-adjusted amount of each of cash and cash equivalents, total assets, accumulated deficit, and total stockholders' deficit by $ million, assuming no change in the assumed public offering price per share and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

(3) Total indebtedness includes mortgages payable of $3,378 and a note payable of $68,525, each as of September 30, 2019.

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should carefully consider the risks and uncertainties described below, together with all of the other information in this prospectus, including our financial statements and related notes, before deciding whether to purchase shares of our common stock. If any of the following risks actually occurs, our business, financial condition, operating results, reputation, and prospects could be materially and adversely affected. In that event, the price of our common stock could decline and you could lose part or all of your investment. Additional risks not presently known to us, or that we presently deem immaterial, may also negatively impact us.

Risks Related to Our Business and Industry

We currently receive and expect to continue to receive a significant portion of our revenues from our women's health-related NIPT and carrier screening products, and if our efforts to further increase the use and adoption of these products fail, our business will be harmed.

We currently receive and expect to continue to receive a significant portion of our revenues from the sales of our women's health-related NIPT product, Innatal, and our carrier screening products, including Preparent. We undertake efforts to increase the awareness and adoption of Innatal and Preparent among laboratories, clinics, clinicians, physicians, payors, and patients. Continued and additional market acceptance of Innatal and Preparent and our ability to attract new customers are key elements to our future success. The market demand for NIPT and carrier screening tests has grown in recent years and is evolving, but this market trend may not continue. Demand for Innatal and Preparent is affected by a number of factors, many of which are beyond our control, including the recommendation of our products by physicians, the timing and development of new products by our competitors, and reimbursement from payors.

Our ability to increase sales of our products and establish greater levels of adoption and reimbursement for our products is uncertain for many reasons, including, among others:

- we may be unable to demonstrate to laboratories, clinics, clinicians, physicians, payors, and patients that our products are superior to alternatives with respect to value, convenience, accuracy, scope of coverage, and other factors;
- third-party coverage and reimbursement are currently primarily limited to high-risk pregnancies and may not gain acceptance for use in the average-risk pregnancy population or for the screening of microdeletions, limiting the overall addressable market;
- third-party payors may set the amounts of reimbursement at prices that reduce our profit margins or do not allow us to cover our expenses;
- we may not be able to maintain and grow effective sales and marketing capabilities;
- our sales and marketing efforts may fail to effectively reach customers or communicate the benefits of our products;
- superior alternatives to our products may be developed and commercialized;
- we may experience supply constraints, including due to the failure of our key suppliers to provide required sequencing instruments and reagents;
- the U.S. Food and Drug Administration, or FDA, may decline to exercise enforcement discretion over laboratory developed tests, or LDTs, and begin asserting regulatory oversight over LDTs and/or may apply a unified, risk-based regulatory framework applicable to all *in vitro* clinical tests, including LDTs; and
- the FDA or other U.S. or foreign regulatory or legislative bodies may adopt new regulations or policies or take other actions that impose significant restrictions on our ability to market our products.

If the market and our market share for our women's health-related NIPT and carrier screening products fail to grow or grow more slowly than expected, our business, operating results, and financial condition would be adversely affected.

We have incurred losses in the past, and we may not be able to achieve or sustain profitability in the future.

In the future, we expect to incur significant costs in connection with the development, approval, and commercialization of enhanced, improved, or new products. Even if we succeed in creating such products from these investments, those innovations still may fail to result in commercially successful products.

Other than revenues from our molecular testing business, we do not expect to generate revenues from other sources in the immediate future. It is possible that we will not generate sufficient revenue from the sale of our products to cover our costs, including research and development expenses related to furthering our product pipeline, and achieve or sustain profitability. Since we or any collaborators or licensees may not successfully develop additional products, obtain required regulatory authorizations, manufacture products at an acceptable cost or with appropriate quality, or successfully market and sell such products with desired margins, our expenses may continue to exceed any revenues we may receive. Our operating expenses also will increase as and if, among other things:

- our earlier-stage product candidates move into later-stage clinical development, which is generally more expensive than early-stage development;
- additional technologies or products are selected for development;
- we pursue development of our molecular tests or other product candidates for new uses;
- we increase the number of patents we are prosecuting or otherwise expend additional resources on patent prosecution or defense; or
- we acquire or in-license additional technologies, product candidates, products, or businesses.

We operate in a highly competitive business environment.

The industries in which we operate are highly competitive and require an ongoing, extensive search for technological innovation. They also require, among other things, the ability to effectively develop, test, commercialize, market, and promote products, including communicating the effectiveness, safety, and value of products to actual and prospective healthcare providers. Other competitive factors in our industries include quality and price, product technology, reputation, customer service, and access to technical information.

Our women's health-related NIPT and carrier screening tests are molecular tests, which are used by obstetricians and gynecologists, maternal fetal medicine specialists, and *in vitro* fertilization specialists. The principal competition for our NIPT and carrier screening tests comes from existing testing methods, technologies, and products, including other molecular NIPT and carrier screening tests offered by our competitors. The molecular testing field is characterized by rapid technological changes, frequent new product introductions, changing customer preferences, emerging competition, evolving industry standards, reimbursement uncertainty, and price competition. Many companies in this market are offering, or may soon offer, products and services that compete with our tests, in some cases at a lower cost than ours, and healthcare providers may choose to recommend the tests of our competitors. Moreover, established, traditional first-line testing prenatal methods, such as serum protein measurement, where doctors measure certain hormones in the blood, and invasive prenatal diagnostics tests like amniocentesis, have been used for many years and are therefore practices that are difficult to change or supplement. Our conception and pre-implantation genetic screening products face competition from various laboratories that offer or seek to offer similar solutions. We also compete against companies providing hereditary cancer screening tests. For more information on our molecular testing competitors, see "Business—Competition in Molecular Testing."

We expect any of our future precision medicine products to face substantial competition from major pharmaceutical companies, biotechnology companies, academic institutions, government agencies, and public

and private research institutions. The larger competitors have substantially greater financial and human resources, as well as a much larger infrastructure than we do. For more information on our precision medicine competitors, see “Business—Competition in Precision Medicine.”

Additionally, we compete to acquire the intellectual property assets that we require to continue to develop and broaden our product portfolio. In addition to our in-house research and development efforts, we seek to acquire rights to new intellectual property through corporate acquisitions, asset acquisitions, licensing, and joint venture arrangements. Competitors with greater resources may acquire intellectual property that we seek, and even where we are successful, competition may increase the acquisition price of such intellectual property or prevent us from capitalizing on such acquisitions, licensing opportunities, or joint venture arrangements. If we fail to compete successfully, our growth may be limited.

It is possible that developments by our competitors could make our products or technologies less competitive or obsolete. Our future growth depends, in part, on our ability to provide products which are more effective than those of our competitors and to keep pace with rapid medical and scientific change. Sales of our existing products and any future products may decline rapidly if a new product is introduced by a competitor, particularly if a new product represents a substantial improvement over any of our existing products. In addition, the high level of competition in our industry could force us to reduce the price at which we sell our products or require us to spend more to market our products.

Many of our competitors have greater resources than we have. This enables them, among other things, to spread their marketing and promotion costs over a broader revenue base. In addition, we may not be able to compete effectively against our competitors because their products and services are superior. Our current and future competitors could have greater experience, technological and financial resources, stronger business relationships, broader product lines and greater name recognition than us, and we may not be able to compete effectively against them. Increased competition is likely to result in pricing pressures, which could harm our revenues, operating income, or market share. If we are unable to compete successfully, we may be unable to increase or sustain our revenues or achieve or sustain profitability.

Our success depends on our ability to improve and enhance our current products and develop new product candidates, which is complex and costly and the results are uncertain.

Effective execution of research and development activities and the timely introduction of enhanced, improved, or new products and product candidates to the market are important elements of our business strategy. However, the development of enhanced, improved, or new products and product candidates is complex, costly, and uncertain and requires us to, among other factors, accurately anticipate patients’, clinicians’, and payors’ needs, and emerging technology trends. For more information on our current research and development efforts, see “Business—Our Research and Development Activities.”

In the development of enhanced, improved, or new products and product candidates, we can provide no assurance that:

- we will develop any products that meet our desired target product profile and address the relevant clinical need or commercial opportunity;
- any products that we develop will prove to be effective in clinical trials, platform validations, or otherwise;
- we will obtain necessary regulatory authorizations, in a timely manner or at all;
- any products that we develop will be successfully marketed to and ordered by healthcare providers;
- any products that we develop will be produced at an acceptable cost and with appropriate quality;
- our current or future competitors will not introduce products similar to ours that have superior performance, lower prices, or other characteristics that cause healthcare providers to recommend, and consumers to choose, such competitive products over ours; or

- third parties do not or will not hold patents in any key jurisdictions that would be infringed by our products.

These and other factors beyond our control could delay our launch of enhanced, improved, or new products and product candidates.

The research and development process in our industries generally requires a significant amount of time from the research and design stage through commercialization. The launch of such new products requires the completion of certain clinical development and/or assay validations in the commercial laboratory. This process is conducted in various stages, and each stage presents the risk that we will not achieve our goals. We may not be able to complete clinical development for any planned product in a timely manner. Such failures could prevent or significantly delay our ability to research, develop, complete clinical development and validation, obtain FDA clearance or approval as may be necessary or desired, obtain approval by entities that provide oversight over LDTs, such as the State of New York, or launch any of our planned products and product candidates. At times, it may be necessary for us to abandon a product in which we have invested substantial resources. Without the timely introduction of new product candidates and improvements or enhancements of our current products, our products may become obsolete over time and our competitors may develop products that are more competitive, in which case our business, operating results, and financial condition will be harmed.

We are still developing our precision medicine platform and to date have generated no precision medicine products or product revenue. There can be no assurance that we will develop any precision medicine products that deliver diagnostic or therapeutic solutions, or, if developed, that such product candidates will be authorized for marketing by regulatory authorities, or will be commercially successful. This uncertainty makes it difficult to assess our future prospects and financial results.

Our operations with respect to our precision medicine platform to date have been limited to developing our platform technology, undertaking pre-clinical studies and clinical trials, and conducting research to identify potential product candidates. To date, we have only conducted clinical trials to evaluate whether our platform technology enables identification of the location of our ingestible medical device, which we refer to as an ingestible capsule, within the gastrointestinal tract.

We seek to develop a suite of ingestible capsules for both diagnostic and therapeutic solutions. However, medical device and related diagnostic and therapeutic product development is a highly speculative undertaking and involves a substantial degree of uncertainty. Our precision medicine platform has not yet demonstrated an ability to generate revenue or successfully overcome many of the risks and uncertainties frequently encountered by companies in new and rapidly evolving fields such as ours. Consequently, the ability to accurately assess the future operating results or business prospects of our precision medicine platform is significantly more limited than if we had an operating history or approved commercial precision medicine products. Our success in developing commercial products that are based on our precision medicine platform will depend on a variety of factors, many of which are beyond our control, including, but not limited to:

- the outcomes from our product development efforts;
- competition from existing products or new products;
- the timing of regulatory review and our ability to obtain regulatory marketing authorizations of our product candidates;
- potential side effects of our product candidates that could delay or prevent receipt of marketing authorizations or cause an approved or cleared product to be taken off the market; and
- the ability of third-party manufacturers to manufacture our product candidates in accordance with current good manufacturing practices, or cGMP, for the conduct of clinical trials and, if approved or cleared, for successful commercialization.

Even if we are able to develop one or more commercial precision medicine products, we expect that the operating results of these products will fluctuate significantly from period to period due to the factors above and a variety of other factors, many of which are beyond our control, including, but not limited to:

- the entry of products that compete with our products;
- market acceptance of our product candidates, if approved or cleared;
- our ability to establish and maintain an effective sales and marketing infrastructure for our products;
- the ability of patients or healthcare providers to obtain coverage or sufficient reimbursement for our products;
- our ability, as well as the ability of any third-party collaborators, to obtain, maintain and enforce intellectual property rights covering our products, product candidates and technologies, and our ability to develop, manufacture and commercialize our products, product candidates, and technologies without infringing on the intellectual property rights of others; and
- our ability to attract and retain key personnel with the appropriate expertise and experience to manage our business effectively.

Accordingly, the likelihood of the success of our precision medicine platform must be evaluated in light of these many potential challenges and variables.

The development of new product candidates will require us to undertake clinical trials, which are costly, time-consuming, and subject to a number of risks.

The development of new product candidates, including development of the data necessary to obtain clearance or approval for such product candidates, is costly, time-consuming, and carries with it the risk of not yielding the desired results. The outcome of preclinical studies and early clinical trials may not be predictive of the success of later clinical trials, and interim results of clinical trials do not necessarily predict success in future clinical trials. Many companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in late-stage clinical trials after achieving positive results in earlier development, and we could face similar setbacks. The design of a clinical trial can determine whether its results will support a product candidate's marketing authorization, to the extent required, and flaws in the design of a clinical trial may not become apparent until the clinical trial is well advanced. In addition, preclinical and clinical data are often susceptible to varying interpretations and analyses. Many companies that believed their product candidates performed satisfactorily in preclinical studies and clinical trials have nonetheless failed to obtain marketing authorization for the product candidates. Furthermore, limited results from earlier-stage studies may not predict results from studies in larger numbers of subjects drawn from more diverse populations over a longer period of time. Unfavorable results from ongoing preclinical studies and clinical trials could result in delays, modifications, or abandonment of ongoing or future analytical or clinical trials, or abandonment of a product development program, or may delay, limit, or prevent marketing authorizations, where required, or commercialization of our product candidates. Even if we, or our collaborators, believe that the results of clinical trials for our product candidates warrant marketing authorization, the FDA and other regulatory authorities may disagree and may not grant marketing authorizations for our product candidates.

Moreover, the FDA requires us to comply with regulatory standards, commonly referred to as the Good Clinical Practice, or GCP, requirements, for conducting, recording, and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, safety, and welfare of trial participants are protected. Other countries' regulatory agencies also have requirements for clinical trials with which we must comply. We also are required to register certain ongoing clinical trials and post the results of certain completed clinical trials on a government-sponsored database, ClinicalTrials.gov, within specified timeframes. Failure to do so can result in fines, enforcement action, adverse publicity, and civil and criminal sanctions.

The initiation and completion of any clinical studies may be prevented, delayed, or halted for numerous reasons. We may experience delays in our ongoing clinical trials for a number of reasons, which could adversely affect the costs, timing or successful completion of our clinical trials, including related to the following:

- we may be required to submit an investigational device exemption, or IDE, application to the FDA with respect to our medical device product candidates, which must become effective prior to commencing certain human clinical trials of medical devices, and the FDA may reject our IDE application and notify us that we may not begin clinical trials;
- regulators and other comparable foreign regulatory authorities may disagree as to the design or implementation of our clinical trials;
- regulators and/or institutional review boards, or IRBs, or other reviewing bodies may not authorize us or our investigators to commence a clinical trial, or to conduct or continue a clinical trial at a prospective or specific trial site;
- we may not reach agreement on acceptable terms with prospective contract research organizations, or CROs, and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and trial sites;
- clinical trials may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical trials or abandon product development programs;
- the number of subjects or patients required for clinical trials may be larger than we anticipate, enrollment in these clinical trials may be insufficient or slower than we anticipate, and the number of clinical trials being conducted at any given time may be high and result in fewer available patients for any given clinical trial, or patients may drop out of these clinical trials at a higher rate than we anticipate;
- our third-party contractors, including those manufacturing products or conducting clinical trials on our behalf, may fail to comply with regulatory requirements or meet their contractual obligations to us in a timely manner, or at all;
- we might have to suspend or terminate clinical trials for various reasons, including a finding that the subjects are being exposed to unacceptable health risks;
- we may have to amend clinical trial protocols or conduct additional studies to reflect changes in regulatory requirements or guidance, which we may be required to submit to an IRB and/or regulatory authorities for re-examination;
- regulators, IRBs, or other parties may require or recommend that we or our investigators suspend or terminate clinical research for various reasons, including safety signals or noncompliance with regulatory requirements;
- the cost of clinical trials may be greater than we anticipate;
- clinical sites may not adhere to the clinical protocol or may drop out of a clinical trial;
- we may be unable to recruit a sufficient number of clinical trial sites;
- regulators, IRBs, or other reviewing bodies may fail to approve or subsequently find fault with our manufacturing processes or facilities of third-party manufacturers with which we enter into agreement for clinical and commercial supplies, the supply of devices or other materials necessary to conduct clinical trials may be insufficient, inadequate or not available at an acceptable cost, or we may experience interruptions in supply;
- marketing authorization policies or regulations of the FDA or applicable foreign regulatory agencies may change in a manner rendering our clinical data insufficient for authorization; and
- our products may have undesirable side effects or other unexpected characteristics.

Any of these occurrences may significantly harm our business, financial condition, and prospects. In addition, many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may also ultimately lead to the denial of regulatory approval of our product candidates.

Patient enrollment in clinical trials and completion of patient follow-up depend on many factors, including the size of the patient population, the nature of the trial protocol, the proximity of patients to clinical sites, the eligibility criteria for the clinical trial, patient compliance, competing clinical trials and clinicians' and patients' perceptions as to the potential advantages of the product being studied in relation to other available therapies, including any new treatments that may be approved for the indications we are investigating. For example, patients may be discouraged from enrolling in our clinical trials if the trial protocol requires them to undergo extensive post-treatment procedures or follow-up to assess the safety and efficacy of a product candidate, or they may be persuaded to participate in contemporaneous clinical trials of a competitor's product candidate. In addition, patients participating in our clinical trials may drop out before completion of the trial or experience adverse medical events unrelated to our products. Delays in patient enrollment or failure of patients to continue to participate in a clinical trial may delay commencement or completion of the clinical trial, cause an increase in the costs of the clinical trial and delays, or result in the failure of the clinical trial.

Clinical trials must be also conducted in accordance with the laws and regulations of the FDA and other applicable regulatory authorities' legal requirements, regulations or guidelines, and are subject to oversight by these governmental agencies and IRBs at the medical institutions where the clinical trials are conducted. We rely on CROs and clinical trial sites to ensure the proper and timely conduct of our clinical trials and while we have agreements governing their committed activities, we have limited influence over their actual performance. We depend on our collaborators and on medical institutions and CROs to conduct our clinical trials in compliance with the FDA's GCP requirements. To the extent our collaborators or the CROs fail to enroll participants for our clinical trials, fail to conduct the study to GCP requirements, or are delayed for a significant time in the execution of trials, including achieving full enrollment, we may be affected by increased costs, program delays, or both. In addition, clinical trials that are conducted in countries outside the United States may subject us to further delays and expenses as a result of increased shipment costs, additional regulatory requirements and the engagement of non-U.S. CROs, as well as expose us to risks associated with clinical investigators who are unknown to the FDA, and different standards of diagnosis, screening and medical care.

The clinical trial process is lengthy and expensive with uncertain outcomes. We have limited data and experience regarding the safety and efficacy of our products. Results of earlier studies may not be predictive of future clinical trial results, or the safety or efficacy profile for such products.

Clinical testing is difficult to design and implement, can take many years, can be expensive, and carries uncertain outcomes. The results of preclinical studies and clinical trials of our products conducted to date and ongoing or future studies and trials of our current, planned, or future products and product candidates may not be predictive of the results of later clinical trials, and interim results of a clinical trial do not necessarily predict final results. Our interpretation of data and results from our clinical trials do not ensure that we will achieve similar results in future clinical trials. In addition, preclinical and clinical data are often susceptible to various interpretations and analyses, and many companies that have believed their products performed satisfactorily in preclinical studies and earlier clinical trials have nonetheless failed to replicate results in later clinical trials. Products in later stages of clinical trials may fail to show the desired safety and efficacy despite having progressed through nonclinical studies and earlier clinical trials. Failure can occur at any stage of clinical testing. Our clinical studies may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical and non-clinical testing in addition to those we have planned.

Interim "top-line" and preliminary data from studies or trials that we announce or publish from time to time may change as more data become available and are subject to audit and verification procedures that could result in material changes in the final data.

From time to time, we may publish interim "top-line" or preliminary data from preclinical studies or clinical trials. Interim data are subject to the risk that one or more of the outcomes may materially change as more data

become available. We also make assumptions, estimations, calculations, and conclusions as part of our analyses of data, and we may not have received or had the opportunity to fully and carefully evaluate all data. As a result, the top-line results that we report may differ from future results of the same studies, or different conclusions or considerations may qualify such results, once additional data have been received and fully evaluated. Preliminary or "top-line" data also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data we previously published. As a result, interim and preliminary data should be viewed with caution until the final data are available. Additionally, interim data from clinical trials that we may complete are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available. Adverse differences between preliminary or interim data and final data could seriously harm our business.

Further, others, including regulatory agencies, may not accept or agree with our assumptions, estimates, calculations, conclusions or analyses or may interpret or weigh the importance of data differently, which could impact the value of the particular program, the approvability or commercialization of the particular product candidate or product and our company in general. In addition, the information we choose to publicly disclose regarding a particular study or clinical trial is based on what is typically extensive information, and you or others may not agree with what we determine is the material or otherwise appropriate information to include in our disclosure. Any information we determine not to disclose may ultimately be deemed significant by you or others with respect to future decisions, conclusions, views, activities or otherwise regarding a particular product candidate or our business. If the top-line data that we report differ from final results, or if others, including regulatory authorities, disagree with the conclusions reached, our ability to obtain marketing authorization for, and commercialize, product candidates may be harmed, which could seriously harm our business.

The results of our clinical trials may not support the use of our tests and other product candidates, or may not be replicated in later studies required for marketing authorizations.

As the healthcare reimbursement system in the United States evolves to place greater emphasis on comparative effectiveness and outcomes data, we cannot predict whether we will have sufficient data, or whether the data we have will be presented to the satisfaction of any payors seeking such data for determining coverage for our tests, particularly in the average-risk pregnancy population for which such data is expected to be of particular interest, in new test areas such as preeclampsia, or in precision medicine diagnostic or therapeutic applications.

The administration of clinical and economic utility studies is expensive and demands significant attention from certain members of our management team. Data collected from these studies may not be positive or consistent with our existing data, or may not be statistically significant or compelling to the medical community or payors. If the results obtained from our ongoing or future studies are inconsistent with certain results obtained from our previous studies, adoption of our products would suffer and our business would be harmed.

Peer-reviewed publications regarding our products and product candidates may be limited by many factors, including delays in the completion of, poor design of, or lack of compelling data from clinical studies, as well as delays in the review, acceptance, and publication process. If our products or product candidates or the technology underlying our current or future products or product candidates do not receive sufficient favorable exposure in peer-reviewed publications, or are not published, the rate of healthcare provider adoption of our tests and positive reimbursement coverage decisions for our tests and other products could be negatively affected. The publication of clinical data in peer-reviewed journals can be a crucial step in commercializing and obtaining reimbursement for tests, diagnostic and therapeutic products and other products, and our inability to control when, if ever, results are published may delay or limit our ability to derive sufficient revenues from any test, diagnostic or therapeutic product that is the subject of a study. The performance achieved in published studies may not be repeated in later studies that may be required to obtain FDA clearance or marketing authorizations should we decide for business reasons, or be required to submit applications to the FDA or other health authorities seeking such authorizations.

Operating our business will require a significant amount of cash, and our ability to generate sufficient cash depends on many factors, some of which are beyond our control. We expect to need to raise additional capital after this offering, and if we cannot raise additional capital when needed, we may have to curtail or cease operations.

In the future, we expect to incur significant costs in connection with our operations, including but not limited to the development, marketing authorization, and commercialization of new tests, medical devices, therapeutics, and other products. These development activities generally require a substantial investment before we can determine commercial viability, and the proceeds of this offering will not be sufficient to fully fund these activities. We expect to need to raise additional funds through public or private equity or debt financings, collaborations or licensing arrangements to continue to fund or expand our operations.

Our actual liquidity and capital funding requirements will depend on numerous factors, including:

- the scope and duration of and expenditures associated with our discovery efforts and research and development programs, including for our precision medicine platform;
- the costs to fund our commercialization strategies for any product candidates for which we receive marketing authorization or otherwise launch and to prepare for potential product marketing authorizations, as required;
- the costs of any acquisitions of complementary businesses or technologies that we may pursue;
- potential licensing or partnering transactions, if any;
- our facilities expenses, which will vary depending on the time and terms of any facility lease or sublease we may enter into, and other operating expenses;
- the scope and extent of the expansion of our sales and marketing efforts;
- the government investigation, potential litigation, and other contingencies;
- the commercial success of our products;
- our ability to obtain more extensive coverage and reimbursement for our tests and therapeutic products, if any, including in the general, average-risk patient population; and
- our ability to collect our accounts receivable.

The availability of additional capital, whether from private capital sources (including banks) or the public capital markets, fluctuates as our financial condition and market conditions in general change. There may be times when the private capital sources and the public capital markets lack sufficient liquidity or when our securities cannot be sold at attractive prices, or at all, in which case we would not be able to access capital from these sources. In addition, a weakening of our financial condition or deterioration in our credit ratings could adversely affect our ability to obtain necessary funds. Even if available, additional financing could be costly or have adverse consequences.

Additional capital, if needed, may not be available on satisfactory terms or at all. Furthermore, any additional capital raised through the sale of equity or equity-linked securities will dilute our stockholders' ownership interests and may have an adverse effect on the price of our common stock. In addition, the terms of any financing may adversely affect stockholders' holdings or rights. Debt financing, if available, may include restrictive covenants. To the extent that we raise additional funds through collaborations and licensing arrangements, it may be necessary to relinquish some rights to our technologies or grant licenses on terms that may not be favorable to us.

If we are not able to obtain adequate funding when needed, we may be required to delay development programs or sales and marketing initiatives. If we are unable to raise additional capital in sufficient amounts or on

satisfactory terms, we may have to make reductions in our workforce and may be prevented from continuing our discovery, development, and commercialization efforts and exploiting other corporate opportunities. In addition, it may be necessary to work with a partner on one or more of our tests or products under development, which could lower the economic value of those products to us. Each of the foregoing may harm our business, operating results, and financial condition, and may impact our ability to continue as a going concern.

Our outstanding debt may impair our financial and operating flexibility.

As of December 31, 2018 and September 30, 2019, we had approximately $70.8 million and $71.9 million of outstanding indebtedness, respectively, composed of mortgages payable and a note payable. Our debt agreements contain various restrictive covenants and are secured by substantially all of our assets, excluding our intellectual property.

The instruments governing our existing debt permit us to incur significant additional debt. Our existing debt and any additional debt we incur could:

- make it more difficult for us to satisfy our obligations under our existing debt instruments;
- increase our vulnerability to general adverse economic and industry conditions;
- limit our ability to obtain additional financing to fund our research, development, and commercialization activities, particularly when the availability of financing in the capital markets is limited;
- require a substantial portion of our cash flows from operations for the payment of principal and interest on our debt, reducing our ability to use our cash flows to fund working capital, research and development, and other general corporate requirements;
- limit our flexibility in planning for, or reacting to, changes in our business and the industries in which we operate; and
- place us at a competitive disadvantage to less leveraged competitors or competitors with a lower cost of capital.

Our ability to make principal and interest payments will depend on our ability to generate cash in the future. If we do not generate sufficient cash to meet our debt service requirements, we may need to seek additional financing. In that case, it may be more difficult, or we may be unable, to obtain financing on terms that are acceptable to us or at all.

Although we have implemented compliance policies and have an internal audit function, we cannot ensure that our employees will fully adhere to such policies.

We have implemented compliance policies and procedures intended to train and monitor our sales, billing, marketing and other personnel. Our efforts to implement appropriate monitoring of such personnel are ongoing and we have experienced situations in which employees may have failed to fully adhere to our policies and applicable laws in the past. There can be no assurance that we will not experience similar issues in the future. Failure by our sales, billing, marketing, or other personnel to follow our policies and comply with applicable laws may subject us to administrative, civil, and criminal actions, penalties, damages, fines, individual imprisonment, exclusion from participation in federal healthcare programs, refunding of payments received by us, and curtailment or cessation of our operations. For additional information regarding an ongoing investigation regarding compliance with certain policies and laws, see “Business—Legal Proceedings.” In addition, commercial third-party payors may refuse to provide all or any reimbursement for tests administered, seek repayment from us of amounts previously reimbursed, and harm our ability to secure network contracts with third-party payors. For additional information regarding recent settlement agreements with commercial payors, see “Business—Reimbursement—Commercial Third-Party Payors.” Any of the foregoing could adversely affect our revenue, cash flow, and financial condition, and reduce our growth prospects. For additional information

regarding these risks, see the risk factor titled “If we or our commercial partners act in a manner that violates healthcare laws or otherwise engage in misconduct, we could face substantial penalties and our business operations and financial condition could be adversely affected.”

Actual or perceived failures to comply with applicable data protection, privacy and security laws, regulations, standards and other requirements could adversely affect our business, results of operations, and financial condition.

The global data protection landscape is rapidly evolving, and we are or may become subject to numerous state, federal, and foreign laws, requirements, and regulations governing the collection, use, disclosure, retention, and security of personal information. Implementation standards and enforcement practices are likely to remain uncertain for the foreseeable future, and we cannot yet determine the impact future laws, regulations, standards, or perception of their requirements may have on our business. This evolution may create uncertainty in our business, affect our ability to operate in certain jurisdictions or to collect, store, transfer, use and share personal information, necessitate the acceptance of more onerous obligations in our contracts, result in liability or impose additional costs on us. The cost of compliance with these laws, regulations, and standards is high and is likely to increase in the future. Any failure or perceived failure by us to comply with federal, state or foreign laws or regulations, our internal policies and procedures or our contracts governing our processing of personal information could result in negative publicity, government investigations and enforcement actions, claims by third parties and damage to our reputation, any of which could have a material adverse effect on our operations, financial performance and business.

As our operations and business grow, we may become subject to or affected by new or additional data protection laws and regulations and face increased scrutiny or attention from regulatory authorities. In the United States, the manner in which we collect, use, access, disclose, transmit and store protected health information, or PHI, is subject to the Health Insurance Portability and Accountability Act of 1996, or HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, and the health data privacy, security and breach notification regulations issued pursuant to these statutes.

HIPAA establishes a set of national privacy and security standards for the protection of PHI, by health plans, healthcare clearinghouses, and certain healthcare providers, referred to as covered entities, and the business associates with whom such covered entities contract for services that involve the use or disclosure of PHI. HIPAA requires healthcare providers like us to develop and maintain policies and procedures with respect to PHI that is used or disclosed, including the adoption of administrative, physical, and technical safeguards to protect such information.

HIPAA further requires covered entities to notify affected individuals “without unreasonable delay and in no case later than 60 calendar days after discovery of the breach” if their unsecured PHI is subject to an unauthorized access, use or disclosure. If a breach affects 500 patients or more, covered entities must report it to the U.S. Department of Health and Human Services, or HHS, and local media without unreasonable delay (and in no case later than 60 days after discovery of the breach), and HHS will post the name of the entity on its public website. If a breach affects fewer than 500 individuals, the covered entity must log it and notify HHS at least annually. HIPAA also implemented the use of standard transaction code sets and standard identifiers that covered entities must use when submitting or receiving certain electronic healthcare transactions, including activities associated with the billing and collection of healthcare claims.

Penalties for failure to comply with a requirement of HIPAA and HITECH vary significantly depending on the failure and could include requiring corrective actions, and/or imposing civil monetary or criminal penalties. HIPAA also authorizes state attorneys general to file suit under HIPAA on behalf of state residents. Courts can award damages, costs and attorneys’ fees related to violations of HIPAA in such cases. While HIPAA does not create a private right of action allowing individuals to sue us in civil court for HIPAA violations, its standards have been used as the basis for a duty of care claim in state civil suits such as those for negligence or recklessness in the misuse or breach of PHI.

Certain states have also adopted comparable privacy and security laws and regulations, some of which may be more stringent than HIPAA. Such laws and regulations will be subject to interpretation by various courts and other governmental authorities, thus creating potentially complex compliance issues for us and our future customers and strategic partners. In addition, California enacted the California Consumer Privacy Act, or CCPA, on June 28, 2018, which takes effect on January 1, 2020. The CCPA creates individual privacy rights for California consumers and increases the privacy and security obligations of entities handling certain personal data. The CCPA provides for civil penalties for violations, as well as a private right of action for data breaches that is expected to increase data breach litigation. The CCPA may increase our compliance costs and potential liability, and many similar laws have been proposed at the federal level and proposed or enacted in other states. Any liability from failure to comply with the requirements of these laws could adversely affect our financial condition.

In Europe, the European Union General Data Protection Regulation (2016/679), or the GDPR, went into effect in May 2018 and introduces strict requirements for processing the personal data of European Union data subjects. Companies that must comply with the GDPR face increased compliance obligations and risk, including more robust regulatory enforcement of data protection requirements and potential fines for noncompliance of up to €20 million or 4% of the annual global revenues of the noncompliant company, whichever is greater. In addition to the GDPR, individual countries in Europe, including but not limited to the United Kingdom, and elsewhere in the world, including but not limited to Brazil, have enacted similar data privacy legislation that applies to data subjects in those countries. This legislation imposes increased compliance obligations and regulatory risk, including the potential for significant fines for noncompliance.

Although we work to comply with applicable laws, regulations and standards, our contractual obligations and other legal obligations, these requirements are evolving and may be modified, interpreted and applied in an inconsistent manner from one jurisdiction to another, and may conflict with one another or other legal obligations with which we must comply. Any failure or perceived failure by us or our employees, representatives, contractors, consultants, CROs, collaborators, or other third parties to comply with such requirements or adequately address privacy and security concerns, even if unfounded, could result in additional cost and liability to us, damage our reputation, and adversely affect our business and results of operations.

Security breaches, loss of data, and other disruptions could compromise sensitive information related to our business or prevent us from accessing critical information and expose us to liability, which could adversely affect our business and reputation.

In the ordinary course of our business, we collect and store sensitive data, including PHI (such as patient medical records, including test results), and personally identifiable information. We also store business and financial information, intellectual property, research and development information, trade secrets and other proprietary and business critical information, including that of our customers, payors, and collaboration partners. We manage and maintain our data utilizing a combination of on-site systems, managed data center systems and cloud-based data center systems. We are highly dependent on information technology networks and systems, including the internet, to securely process, transmit, and store critical information. Although we take measures to protect sensitive information from unauthorized access or disclosure, our information technology and infrastructure, and that of our third-party billing and collections provider and other service providers, may be vulnerable to attacks by hackers, viruses, disruptions and breaches due to employee error or malfeasance.

A security breach or privacy violation that leads to unauthorized access, disclosure or modification of, or prevents access to, patient information, including personally identifiable information or PHI, could compel us to comply with state and federal breach notification laws, subject us to mandatory corrective action and require us to verify the correctness of database contents. Such a breach or violation also could result in legal claims or proceedings brought by a private party or a governmental authority, liability under laws and regulations that protect the privacy of personal information, such as HIPAA, HITECH, and laws and regulations of various U.S. states and foreign countries, as well as penalties imposed by the payment card Industry. If we are unable to

prevent such security breaches or privacy violations or implement satisfactory remedial measures, we may suffer loss of reputation, financial loss and civil or criminal fines or other penalties because of lost or misappropriated information. In addition, these breaches and other forms of inappropriate access can be difficult to detect, and any delay in identifying them may lead to increased harm of the type described above.

Unauthorized access, loss or dissemination of information could disrupt our operations, including our ability to perform tests, provide test results, bill payors or patients, process claims and appeals, provide customer assistance services, conduct research and development activities, develop and commercialize tests, collect, process and prepare company financial information, provide information about our tests, educate patients and healthcare providers about our service, and manage the administrative aspects of our business, any of which could damage our reputation and adversely affect our business. Any breach could also result in the compromise of our trade secrets and other proprietary information, which could adversely affect our competitive position.

In addition, health-related, privacy, and data protection laws and regulations in the United States and elsewhere are subject to interpretation and enforcement by various governmental authorities and courts, resulting in complex compliance issues and the potential for varying or even conflicting interpretations, particularly as laws and regulations in this area are in flux. It is possible that these laws may be interpreted and applied in a manner that is inconsistent with our practices. If so, this could result in government-imposed fines or orders requiring that we change our practices, which could adversely affect our business and our reputation. Complying with these laws could cause us to incur substantial costs or require us to change our business practices and compliance procedures in a manner adverse to our business, operating results, and financial condition.

Any failure or perceived failure by us or any third-party collaborators, service providers, contractors or consultants to comply with our privacy, confidentiality, data security or similar obligations, or any data security incidents or other security breaches that result in the accidental, unlawful or unauthorized access to, use of, release of, processing of, or transfer of sensitive information, including personally identifiable information, may result in negative publicity, harm to our reputation, governmental investigations, enforcement actions, regulatory fines, litigation or public statements against us, could cause third parties to lose trust in us or could result in claims by third parties, including those that assert that we have breached our privacy, confidentiality, data security or similar obligations, any of which could have a material adverse effect on our reputation, business, financial condition or results of operations. We could be subject to fines and penalties (including civil and criminal) under HIPAA for any failure by us or our business associates to comply with HIPAA's requirements. Moreover, data security incidents and other security breaches can be difficult to detect, and any delay in identifying them may lead to increased harm. While we have implemented data security measures intended to protect our information, data, information technology systems, applications and infrastructure, there can be no assurance that such measures will successfully prevent service interruptions or data security incidents.

We have increased the size of our organization and expect to further increase it in the future, and we may experience difficulties in managing this growth. If we are unable to manage the anticipated growth of our business, our future revenue and operating results may be adversely affected.

As of November 26, 2019, we had 701 full-time employees worldwide. We have significantly expanded the size of our organization over the past several years, particularly personnel within our sales and marketing and research and development groups, and we expect to continue to do so in the future. As we transition into operating as a public company, we expect to need additional managerial, operational, sales, marketing, financial, and other personnel. Future growth would impose significant added responsibilities on members of management, including:

- identifying, recruiting, integrating, maintaining, and motivating additional employees;
- managing our internal development efforts effectively, while complying with our contractual obligations to contractors and other third parties; and
- improving our operational, financial, and management controls, reporting systems, and procedures.

Our future financial performance and our ability to successfully develop, market, and sell our products and product candidates will depend, in part, on our ability to effectively manage any future growth, and our management may also have to divert a disproportionate amount of attention away from day-to-day activities in order to devote a substantial amount of time to managing these growth activities.

We are engaged in extensive research and development activities, including innovation within our molecular testing business as well as furthering our novel pipeline of precision medicine product candidates. Conducting these activities in conjunction with our efforts to establish our precision medicine platform will entail significant organizational complexity and require extensive effort on the part of our personnel. If we are unable to execute on our operational goals it would have a material and adverse effect on our business, financial condition, results of operations, and prospects.

If we lose the services of members of our senior management team or other key employees, we may not be able to execute our business strategy.

Our success depends in large part upon the continued service of our senior management team and certain other key employees who are important to our vision, strategic direction, and culture. Our current long-term business strategy was developed in large part by our senior management team and depends in part on their skills and knowledge to implement. We may not be able to offset the impact on our business of the loss of the services of any member of our senior management or other key officers or employees or attract additional talent. The loss of any members of our senior management team or other key employees could have a material and adverse effect on our business, operating results, and financial condition.

An inability to attract and retain highly skilled employees could adversely affect our business.

To execute our business plan, we must attract and retain highly qualified personnel. Competition for qualified personnel is intense, especially for sales, scientific, medical, laboratory, and technical personnel and especially in the areas where our headquarters and laboratory facilities are located. We have from time to time experienced, and we expect to continue to experience, difficulty in hiring and retaining employees with appropriate qualifications. Many of the companies with which we compete for experienced personnel have greater resources than we have. If we hire employees from competitors or other companies, their former employers may attempt to assert that these employees have breached their legal obligations to their former employees, resulting in a diversion of our time and resources. In addition, job candidates and existing employees often consider the value of the stock awards they receive in connection with their employment. If the perceived value of our stock awards declines, it may adversely affect our ability to attract and retain highly skilled employees. If we fail to attract new personnel or fail to retain and motivate our current personnel, our business, operating results, and financial condition could be adversely affected.

We may not be able to obtain and maintain the third-party relationships that are necessary to develop, commercialize, and manufacture some or all of our product candidates.

We expect to depend on collaborators, partners, licensees, manufacturers, and other third parties to support our product candidate development efforts, to manufacture our product candidates and to market, sell, and distribute any products we successfully develop. Any problems we experience with any of these third parties could delay the development, commercialization, and manufacturing of our product candidates, which could harm our results of operations.

We cannot guarantee that we will be able to successfully negotiate agreements for, or maintain relationships with, collaborators, partners, licensees, manufacturers, and other third parties on favorable terms, if at all. If we are unable to obtain or maintain these agreements, we may not be able to clinically develop, manufacture, obtain regulatory authorizations for, or commercialize any future product candidates, which will in turn adversely affect our business.

We expect to expend substantial management time and effort to enter into relationships with third parties and, if we successfully enter into such relationships, to manage these relationships. In addition, substantial amounts will

be paid to third parties in these relationships. However, we cannot control the amount or timing of resources our future contract partners will devote to our research and development programs, product candidates, or potential product candidates, and we cannot guarantee that these parties will fulfill their obligations to us under these arrangements in a timely fashion, if at all. In addition, while we manage the relationships with third parties, we cannot control all of the operations of and protection of intellectual property by such third parties.

We rely on third-party laboratories to perform some of our testing and further rely on third parties for sample collection, including phlebotomy services, and commercial courier delivery services, and if these services are disrupted, our business will be harmed.

A portion of our tests are performed by third-party CLIA certified laboratories. These third-party laboratories are subject to contractual obligations but are not otherwise under our control. We, therefore, do not control the capacity and quality control efforts of these third-party laboratories other than through our ability to enforce contractual obligations on volume and quality systems. In the event of any adverse developments with these third-party laboratories or their ability to perform this testing in accordance with the legal, regulatory, or commercial standards, our ability to provide test results to customers may be delayed or interrupted. Any natural or other disasters, acts of war or terrorism, shipping embargoes, labor unrest, or political instability or similar events at our third-party laboratories' facilities that cause a loss of testing capacity would heighten the risks that we face. Changes to or termination of our agreements or inability to renew our agreements with these parties or enter into new agreements with other laboratories that are able to perform such testing could impair, delay, or suspend our efforts to market and commercialize our tests. Such interruption could harm our reputation and lead to the loss of customers, and we may be unable to regain those customers in the future. In addition, certain third-party payors may take the position that sending out this testing to third-party laboratories is contrary to the terms of their coverage policies and/or our contract in cases where we are in-network with the payor, and may refuse to pay us for testing that we have outsourced. If any of these events occur, our business, operating results, and financial condition could suffer.

Federal and certain state laws impose anti-markup restrictions that prevent an entity from realizing a profit margin on outsourced testing. Whether we will be able to realize a profit margin on outsourced testing will be determined by the application of those laws. If we or our subsidiaries are unable to markup outsourced testing, our operating results would suffer.

Our molecular testing business depends on our ability to quickly and reliably deliver test results to our customers. We rely on third parties to perform sample collection, including phlebotomy services, and to transport samples to our laboratory facility or the third-party laboratories that we contract with in a timely and cost-efficient manner. Disruptions in these services, whether due to any natural or other disasters, acts of war or terrorism, shipping embargoes, labor unrest, political instability, or similar events, could adversely affect specimen integrity and our ability to process samples in a timely manner and to service our customers, and ultimately our reputation and our business. In addition, if we are unable to continue to obtain expedited delivery services on commercially reasonable terms, our operating results may be adversely affected.

In addition, our relationships with these third-party providers could be scrutinized under federal and state healthcare laws such as the federal Anti-Kickback Statute and the Stark Law to the extent these services provide a financial benefit to or relieve a financial burden for a potential referral source, or are subsequently found not to be for fair market value. If our operations are found to be in violation of any of these laws and regulations, we may be subject to administrative, civil and criminal penalties, damages, fines, individual imprisonment, exclusion from participation in federal healthcare programs, refunding of payments received by us, and curtailment or cessation of our operations, any of which could harm our reputation and adversely affect our business, operating results, and financial condition. For additional information regarding these risks, see the risk factor titled "If we or our commercial partners act in a manner that violates healthcare laws or otherwise engage in misconduct, we could face substantial penalties and our business operations and financial condition could be adversely affected."

We rely on a limited number of suppliers or, in some cases, single suppliers, for some of our laboratory instruments and materials and may not be able to find replacements or immediately transition to alternative suppliers.

We source components of our technology from third parties and certain components are sole sourced. Obtaining substitute components may be difficult or require us to re-design our products or, for any product candidates for which we may obtain marketing authorization from the FDA, obtain new marketing authorization from the FDA to use a new supplier. Any natural or other disasters, acts of war or terrorism, shipping embargoes, labor unrest or political instability or similar events at our third-party manufacturers' facilities that cause a loss of manufacturing capacity or a reduction in the quality of the items manufactured would heighten the risks that we face. Changes to, failure to renew or termination of our existing agreements or our inability to enter into new agreements with other suppliers could result in the loss of access to important components of our tests and could impair, delay or suspend our commercialization efforts. Our failure to maintain a continued supply of high-quality components could materially and adversely harm our business, operating results, and financial condition.

For example, Illumina, Inc., or Illumina, in San Diego, California, is currently the sole supplier of our sequencing instruments and certain reagents for Innatal and Preparent, pursuant to a supply agreement that, unless extended by mutual agreement, expires in June 2022. Without such inputs, we would be unable to run our tests and commercialize our products. In early 2013, prior to our entering into our agreement with Illumina, Illumina completed its acquisition of Verinata Health Inc., or Verinata, a direct competitor in the NIPT market. We understand Illumina supplies the same or similar instruments and related reagents to Verinata. As a result, we face heightened risk and uncertainty regarding our supply relationship with Illumina. If required, alternative sequencing platforms may not perform as well or may be more expensive and we may be unsuccessful employing such platforms in a commercially sustainable way. Any disruptions to our laboratory performance and ability to deliver our products could adversely affect our business, operating results, financial condition, and reputation. In addition, if we were required by the FDA to obtain approval for Innatal or Preparent through a pre-market approval application, or PMA, we may also be required to obtain approval of a PMA supplement prior to making any changes to Innatal or Preparent as a result of implementing an alternative sequencing platform.

The manufacturing of our products, including our precision medicine product candidates, is highly exacting and complex, and we depend on third parties to supply materials and manufacture all our products and product candidates.

Manufacturing is highly exacting and complex due, in part, to strict regulatory requirements governing the manufacture of our current and future products and product candidates, including medical devices, diagnostic products, and pharmaceutical products. We have limited personnel with experience in, and we do not own facilities for, manufacturing any products. We depend upon our collaborators and other third parties, including sole source suppliers, to provide raw materials meeting FDA quality standards and related regulatory requirements, manufacture devices, diagnostic products, and drug substances, produce drug products and provide certain analytical services with respect to our products and product candidates. The FDA and other regulatory authorities require that many of our products be manufactured according to cGMP regulations and that proper procedures be implemented to assure the quality of our sourcing of raw materials and the manufacture of our products. Any failure by us, our collaborators, or our third-party manufacturers to comply with cGMP and/or scale-up manufacturing processes could lead to a delay in, or failure to obtain, marketing authorizations. In addition, such failure could be the basis for action by the FDA, including issuing a warning letter, initiating a product recall or seizure, fines, imposing operating restrictions, total or partial suspension of production or injunctions and/or withdrawing marketing authorizations for products previously granted to us. To the extent we rely on a third-party manufacturer, the risk of noncompliance with cGMPs may be greater and the ability to effect corrective actions for any such noncompliance may be compromised or delayed.

Moreover, we expect that certain of our precision medicine product candidates, including PGN-600, PGN-001 and PGN-300, are drug/device combination products that will be regulated under the drug and biological product

regulations of the Federal Food, Drug, and Cosmetic Act, or the FD&C Act, and Public Health Service Act, or PHSA, based on their primary modes of action as drugs and biologics. Third-party manufacturers may not be able to comply with cGMP regulations, applicable to drug/device combination products, including applicable provisions of the FDA's drug and biologics cGMP regulations, device cGMP requirements embodied in the Quality System Regulation, or QSR, or similar regulatory requirements outside the United States.

In addition, we or third parties may experience other problems with the manufacturing, quality control, storage or distribution of our products, including equipment breakdown or malfunction, failure to follow specific protocols and procedures, problems with suppliers and the sourcing or delivery of raw materials and other necessary components, problems with software, labor difficulties, and natural disaster-related events or other environmental factors. These problems can lead to increased costs, lost sales, damage to customer relations, failure to supply penalties, time and expense spent investigating the cause and, depending on the cause, similar losses with respect to other batches of products. If problems are not discovered before the product is released to the market, recalls, corrective actions, or product liability-related costs also may be incurred. Problems with respect to the manufacture, storage, or distribution of products could materially disrupt our business and have a material and adverse effect on our operating results and financial condition.

For additional information regarding our third-party suppliers and manufacturers, see "Business—Laboratories—Laboratory Supplies."

We rely on third parties to design our product candidates and conduct our preclinical research and clinical trials, and those third parties may not perform satisfactorily, including failing to meet deadlines for the completion of such trials.

We rely and expect to continue to rely on third parties, such as engineering firms, CROs, clinical data management organizations, medical institutions, and clinical investigators, to conduct and manage our molecular testing and therapeutic product candidate design, preclinical testing, and clinical trials. Our reliance on these third parties for research and development activities reduces our control over these activities but does not relieve us of our responsibilities. For example, we remain responsible for ensuring that each of our clinical trials is conducted in accordance with GCP requirements, the general investigational plan, and the protocols established for such trials.

These third parties may be slow to recruit patients and complete the studies. Furthermore, these third parties may also have relationships with other entities, some of which may be our competitors. If these third parties do not successfully carry out their contractual duties, do not meet expected deadlines, experience work stoppages, terminate their agreements with us or need to be replaced, or do not conduct our clinical trials in accordance with regulatory requirements or our stated protocols, we may need to enter into new arrangements with alternative third parties, which could be difficult, costly or impossible, and our clinical trials may be extended, delayed, or terminated or may need to be repeated. If any of the foregoing occur, we may not be able to obtain, or may be delayed in obtaining, marketing authorizations for our product candidates and may not be able to, or may be delayed in our efforts to, successfully commercialize our product candidates.

If our laboratory facilities become inoperable, we will be unable to perform our tests and our business will be harmed.

Our laboratory or other facilities may be harmed or rendered inoperable (or samples could be damaged or destroyed) by natural or manmade disasters, including earthquakes, flooding, power outages and contamination, which may render it difficult or impossible for us to perform our tests for some period of time. The inability to perform our tests or the backlog of tests that could develop if any of our laboratory or other facilities is inoperable for even a short period of time may result in the loss of customers or harm to our reputation, and we may be unable to regain those customers in the future.

Our tests may not perform as expected and may result in reduced confidence in our products or legal claims.

Our success depends on the market's confidence that we can provide reliable, high-quality test results. There is no guarantee that the accuracy and reproducibility we have demonstrated to date will continue as our business grows. We believe that our customers (healthcare providers and their patients) are likely to be particularly sensitive to test limitations and errors, including inaccurate test results and the need on occasion to perform redraws on patients. As a result, if our tests do not perform as expected, our business, operating results, financial condition, and reputation will suffer. In addition, we may be subject to legal claims arising from such limitations, errors, or inaccuracies.

Our tests use a number of complex and sophisticated biochemical and bioinformatics processes, many of which are highly sensitive to external factors. An operational or technology failure in one of these complex processes or fluctuations in external variables may result in sensitivity and specificity rates that are lower than we anticipate or that vary between test runs or in a higher than anticipated number of tests which fail to produce results. In addition, we regularly evaluate and refine our testing process. These refinements may initially result in unanticipated issues that may reduce our sensitivity and specificity rates.

Even if our newly developed product candidates receive marketing authorizations, to the extent required, they may fail to achieve market acceptance.

If we can develop enhanced, improved, or new product candidates that receive marketing authorizations, they may nonetheless fail to gain sufficient market acceptance by healthcare providers, patients, third-party payors, and others in the medical community to be commercially successful. The degree of market acceptance of any of our new product candidates following receipt of marketing authorizations, if any, will depend on a number of factors, including:

- our ability to anticipate and meet customer and patient needs;
- the timing of regulatory approvals or clearances, to the extent such are required for marketing;
- the efficacy, safety and other potential advantages, such as convenience and ease of administration, of our product candidates as compared to alternative tests or treatments;
- the clinical indications for which our product candidates are approved or cleared, or in the case of our LDTs, validated;
- concordance with clinical guidelines established by relevant professional colleges;
- compliance with state guidelines and licensure, if applicable;
- our ability to offer our product candidates for sale at competitive prices;
- the willingness of the target patient population to try our new products, and of physicians to prescribe these products;
- the strength of our marketing and distribution support;
- the availability and requirements of third-party payor insurance coverage and adequate reimbursement for our product candidates;
- the prevalence and severity of side effects and the overall safety profiles of our product candidates;
- any restrictions on the use of our product candidates together with other products and medications;
- our ability to manufacture quality products in an economic and timely manner;
- interactions of our product candidates with other medications patients are taking; and
- for ingestible product candidates, the ability of patients to take and tolerate our product candidates.

If our newly developed product candidates are unable to achieve market acceptance, our business, operating results, and financial condition will be harmed.

Additional time may be required to obtain marketing authorizations for certain of our precision medicine product candidates because they are combination products.

Some of our precision medicine product candidates are drug/device combination products that require coordination within the FDA and similar foreign regulatory agencies for review of their device and drug components. Although the FDA and similar foreign regulatory agencies have systems in place for the review and approval of combination products such as ours, we may experience delays in the development and commercialization of our product candidates due to regulatory timing constraints and uncertainties in the product development and approval process.

Our precision medicine product candidates under development include complex medical devices that, if authorized for marketing, will require training for qualified personnel and care for data analysis.

Our precision medicine product candidates under development include complex medical devices that, if authorized for marketing, will require training for qualified personnel, including physicians, and care for data analysis. Although we will be required to ensure that our precision medicine product candidates are prescribed only by trained professionals, the potential for misuse of our precision medicine product candidates, if authorized for marketing, still exists due to their complexity. Such misuse could result in adverse medical consequences for patients that could damage our reputation, subject us to costly product liability litigation, and otherwise have a material and adverse effect on our business, operating results, and financial condition.

The successful discovery, development, manufacturing, and sale of biologics is a long, expensive, and uncertain process and carries unique risks and uncertainties. Moreover, even if successful, our biologic products may be subject to competition from biosimilars.

We may develop product candidates regulated as biologics in the future in connection with our precision medicine platform. The successful development, manufacturing, and sale of biologics is a long, expensive, and uncertain process. There are unique risks and uncertainties with biologics. For example, access to and supply of necessary biological materials, such as cell lines, may be limited and governmental regulations restrict access to and regulate the transport and use of such materials. In addition, the testing, development, approval, manufacturing, distribution, and sale of biologics is subject to applicable provisions of the FD&C Act, PHSA, and regulations issued thereunder that are often more complex and extensive than the regulations applicable to other pharmaceutical products, to medical devices, or to the LDTs we currently commercialize. Manufacturing biologics, especially in large quantities, is often complicated and may require the use of innovative technologies. Such manufacturing also requires facilities specifically designed and validated for this purpose and sophisticated quality assurance and quality control procedures. Biologics are also frequently costly to manufacture because production inputs are derived from living animal or plant material, and some biologics cannot be made synthetically. Failure to successfully discover, develop, manufacture, and sell biologics could adversely impact our business, operating results, and financial condition.

Even if we are able to successfully develop biologics in the future, the Biologics Price Competition and Innovation Act, or BPCIA, created a framework for the approval of biosimilars in the United States that could allow competitors to reference data from any future biologic products for which we receive marketing approvals and otherwise increase the risk that any product candidates for which we intend to seek approval as biologic products may face competition sooner than anticipated. Under the BPCIA, an application for a biosimilar product may not be submitted to the FDA until four years following the date that the original biologic was first licensed by the FDA. In addition, the approval of a biosimilar product may not be made effective by the FDA until 12 years from the date on which the reference product was first licensed. During this 12-year period of exclusivity, another company may still market a competing version of the reference product if the FDA approves a full Biologics License Application, or BLA, for the competing product containing the sponsor’s own pre-clinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity, and potency of their product. The BPCIA is complex and is still being interpreted and implemented by the FDA. As a result, the law’s ultimate impact, implementation, and meaning are subject to uncertainty. While it is uncertain when such

processes intended to implement the BPCIA may be fully adopted by the FDA, any such processes could have a material adverse effect on the future commercial prospects for our biological product candidates.

In addition, there is a risk that any of our product candidates regulated as a biologic and licensed under a BLA would not qualify for the 12-year period of exclusivity or that this exclusivity could be shortened due to congressional action or otherwise, potentially creating the opportunity for generic competition sooner than anticipated. Other aspects of the BPCIA, some of which may impact the BPCIA exclusivity provisions, have been the subject of litigation. Moreover, the extent to which a biosimilar, once approved, will be substituted for any one of our reference products in a way that is similar to traditional generic substitution for non-biological products is not yet clear, and will depend on a number of marketplace and regulatory factors that are still developing.

In Europe, the European Commission has granted marketing authorizations for several biosimilars pursuant to a set of general and product class-specific guidelines for biosimilar approvals issued over the past few years. In addition, companies are developing biosimilars in other countries that could compete with any biologic products that we develop. If competitors are able to obtain marketing approval for biosimilars referencing any biologic products that we develop, our products may become subject to competition from such biosimilars, with the attendant competitive pressure and consequences. Expiration or successful challenge of our applicable patent rights could also trigger competition from other products, assuming any relevant exclusivity period has expired. As a result, we could face more litigation and administrative proceedings with respect to the validity and/or scope of patents relating to our biologic products.

If our future pharmaceutical product candidates are not approved by regulatory authorities, including the FDA, we will be unable to commercialize them.

In the future, we may develop pharmaceutical product candidates using our precision medicine platform that require FDA approval of a New Drug Application, or NDA, or a BLA before marketing or sale in the United States. In the NDA or BLA process, we, or our collaborative partners, must provide the FDA and similar foreign regulatory authorities with data from preclinical and clinical studies that demonstrate that our product candidates are safe and effective, or in the case of biologics, safe, pure, and potent, for a defined indication before they can be approved for commercial distribution. The FDA or foreign regulatory authorities may disagree with our clinical trial designs and our interpretation of data from preclinical studies and clinical trials. The processes by which regulatory approvals are obtained from the FDA and foreign regulatory authorities to market and sell a new product are complex, require a number of years, depend upon the type, complexity, and novelty of the product candidate, and involve the expenditure of substantial resources for research, development, and testing. The FDA has substantial discretion in the drug approval process and may require us to conduct additional nonclinical and clinical testing or to perform post-marketing studies. Further, the implementation of new laws and regulations, and revisions to FDA clinical trial design guidance, may lead to increased uncertainty regarding the approvability of new drugs.

Applications for our drug or biologic product candidates could fail to receive regulatory approval for many reasons, including but not limited to the following:

- the FDA or comparable foreign regulatory authorities may disagree with the design, implementation or results of our or our collaborators' clinical trials;
- the FDA or comparable foreign regulatory authorities may determine that our product candidates are not safe and effective, only moderately effective or have undesirable or unintended side effects, toxicities or other characteristics;
- the population studied in the clinical program may not be sufficiently broad or representative to assure efficacy and safety in the full population for which we seek approval;
- we or our collaborators may be unable to demonstrate to the FDA, or comparable foreign regulatory authorities that a product candidate's clinical and other benefits outweigh its safety risks;

- the FDA or comparable foreign regulatory authorities may disagree with our or our collaborators' interpretation of data from preclinical studies or clinical trials;
- the data collected from clinical trials of our product candidates may not be sufficient to support the submission of a BLA, NDA, or other submission or to obtain regulatory approval in the United States or elsewhere;
- the FDA or comparable foreign regulatory authorities may fail to approve the manufacturing processes, test procedures and specifications, or facilities of third-party manufacturers with which we contract for clinical and commercial supplies; and
- the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner rendering our or our collaborators' clinical data insufficient for approval.

This lengthy approval process, as well as the unpredictability of the results of clinical trials, may result in our failing to obtain regulatory approval to market any of our product candidates, which would seriously harm our business. In addition, the FDA may recommend advisory committee meetings for certain new molecular entities, and if warranted, require a Risk Evaluation and Mitigation Strategy, or REMS, to assure that a drug's benefits outweigh its risks. Even if we receive regulatory approval of a product, the approval may limit the indicated uses for which the drug may be marketed or impose significant restrictions or limitations on the use and/or distribution of such product.

In addition, in order to market any pharmaceutical or biological product candidates that we develop in foreign jurisdictions, we, or our collaborative partners, must obtain separate regulatory approvals in each country. The approval procedure varies among countries and can involve additional testing, and the time required to obtain approval may differ from that required to obtain FDA approval. Approval by the FDA does not ensure approval by regulatory authorities in other countries, and approval by one foreign regulatory authority does not ensure approval by regulatory authorities in other foreign countries or by the FDA. Conversely, failure to obtain approval in one or more jurisdictions may make approval in other jurisdictions more difficult. These laws, regulations, additional requirements and changes in interpretation could cause non-approval or further delays in the FDA's or other regulatory authorities' review and approval of our and our collaborative partner's product candidates, which would materially harm our business and financial condition and could cause the price of our securities to fall.

The marketing authorization process is expensive, time-consuming, and uncertain, and we may not be able to obtain or maintain authorizations for the commercialization of some or all of our product candidates.

The product candidates associated with our precision medicine platform and the activities associated with their development and commercialization, including their design, testing, manufacture, safety, efficacy, recordkeeping, labeling, storage, approval, advertising, promotion, sale, and distribution, export, and import, are subject to comprehensive regulation by the FDA and other regulatory agencies in the United States and by the European Medicines Agency and comparable regulatory authorities in other countries. We have not received authorization to market any of our product candidates from regulatory authorities in any jurisdiction. Failure to obtain marketing authorization for a product candidate will prevent us from commercializing the product candidate.

Securing marketing authorizations may require the submission of extensive preclinical and clinical data and other supporting information to the various regulatory authorities for each therapeutic indication to establish the product candidate's safety and efficacy, or in the case of product candidates regulated as biologics, such product candidate's safety, purity, and potency. Securing regulatory authorization generally requires the submission of information about the product manufacturing process to, and inspection of manufacturing facilities by, the relevant regulatory authority. Our product candidates may not be effective, may be only moderately effective, or may prove to have undesirable or unintended side effects, toxicities or other characteristics that may preclude our obtaining marketing authorization or prevent or limit commercial use.

The process of obtaining marketing authorizations, both in the United States and abroad, is expensive, may take many years if additional clinical trials are required, if authorization is obtained at all, and can vary substantially based upon a variety of factors, including the type, complexity, and novelty of the product candidates involved. Changes in marketing authorization policies during the development period, changes in or the enactment of additional statutes or regulations, or changes in regulatory review for each submitted product application, may cause delays in the approval or rejection of an application. The FDA and comparable authorities in other countries have substantial discretion in the approval process and may refuse to accept any application we submit, or may decide that our data is insufficient for approval and require additional preclinical, clinical, or other studies. In addition, varying interpretations of the data obtained from preclinical and clinical testing could delay, limit, or prevent marketing authorization of a product candidate. Any marketing authorization we or our collaborators ultimately obtain may be limited or subject to restrictions or post-approval commitments that render the approved medicine not commercially viable.

Accordingly, if we or our collaborators experience delays in obtaining authorization or if we or they fail to obtain authorization of our product candidates, the commercial prospects for our product candidates may be harmed and our ability to generate revenue will be materially impaired.

Our products or product candidates may cause undesirable side effects or have other properties that could delay or prevent their regulatory authorization, limit the commercial profile of an approved label or result in significant negative consequences following marketing approval, if granted.

The use of our current products and precision medicine product candidates could be associated with side effects or adverse events, which can vary in severity (from minor reactions to death) and frequency (infrequent or prevalent). Side effects or adverse events associated with the use of our product candidates may be observed at any time, including in clinical trials or when a product is commercialized. Undesirable side effects caused by our product candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory authorization by the FDA or other comparable foreign authorities. Results of our trials could reveal a high and unacceptable severity and prevalence of side effects such as toxicity or other safety issues and could require us or our collaboration partners to perform additional studies or halt development or sale of these product candidates or expose us to product liability lawsuits, which would harm our business. In such an event, we may be required by regulatory agencies to conduct additional animal or human studies regarding the safety and efficacy of our product candidates, which we have not planned or anticipated or our studies could be suspended or terminated, and the FDA or comparable foreign regulatory authorities could order us to cease further development of or deny or withdraw approval of our product candidates for any or all targeted indications. There can be no assurance that we will resolve any issues related to any product-related adverse events to the satisfaction of the FDA or any other regulatory agency in a timely manner, if ever, which could harm our business, operating results, financial condition and prospects.

Additionally, product quality characteristics have been shown to be sensitive to changes in process conditions, manufacturing techniques, equipment or sites and other such related considerations, hence any manufacturing process changes we implement prior to or after regulatory authorization could impact product safety and efficacy.

Product-related side effects could affect patient recruitment for clinical trials, the ability of enrolled patients to complete our studies or result in potential product liability claims. We currently carry product liability insurance and we are required to maintain product liability insurance pursuant to certain of our license agreements. We believe our product liability insurance coverage is sufficient in light of our current clinical programs; however, we may not be able to maintain insurance coverage at a reasonable cost or in sufficient amounts to protect us against losses due to liability. A successful product liability claim or series of claims brought against us could adversely affect our business, operating results, and financial condition. In addition, regardless of merit or eventual outcome, product liability claims may result in impairment of our business reputation, withdrawal of clinical study participants, costs due to related litigation, distraction of management’s attention from our primary business, initiation of investigations by regulators, substantial monetary awards to patients or other claimants, the

inability to commercialize our product candidates and decreased demand for our product candidates, if authorized for commercial sale.

Additionally, if one or more of our product candidates receives marketing authorization, and we or others later identify undesirable side effects caused by such products, a number of potentially significant negative consequences could result, including but not limited to:

- regulatory authorities may suspend, limit or withdraw marketing authorizations for such products, or seek an injunction against their manufacture or distribution;
- regulatory authorities may require additional warnings on the label including “boxed” warnings, or issue safety alerts, Dear Healthcare Provider letters, press releases or other communications containing warnings or other safety information about the product;
- we may be required to change the way the product is administered or conduct additional clinical trials or post-approval studies;
- we may be required to create a REMS plan, which could include a medication guide outlining the risks of such side effects for distribution to patients, a communication plan for healthcare providers and/or other elements to assure safe use;
- the product may become less competitive;
- we may be subject to fines, injunctions or the imposition of criminal penalties;
- we could be sued and held liable for harm caused to patients; and
- our reputation may suffer.

Any of these events could prevent us from achieving or maintaining market acceptance of a particular product candidate, if approved, and could significantly harm our business, operating results, financial condition, and prospects.

If we receive marketing authorization, regulatory agencies including the FDA and foreign authorities enforce requirements that we report certain information about adverse medical events. For example, under FDA medical device reporting regulations, medical device manufacturers are required to report to the FDA information that a device has or may have caused or contributed to a death or serious injury or has malfunctioned in a way that would likely cause or contribute to a death or serious injury if the malfunction of our device (or any similar future product) were to recur. We may fail to appreciate that we have become aware of a reportable adverse event, especially if it is not reported to us as an adverse event or if it is an adverse event that is unexpected or removed in time from the use of our products. If we fail to investigate and report these events to the FDA within the required timeframes, or at all, the FDA could take enforcement action against us. Any such adverse event involving our products also could result in future corrective actions, such as recalls or customer notifications, or agency action, such as inspection or enforcement action. Any corrective action, whether voluntary or involuntary, including any legal action taken against us, will require us to devote sufficient time and capital to the matter, distract management from operating our business, and may harm our reputation and financial results.

Our products, including our precision medicine product candidates under development, if authorized for marketing, may be subject to product recalls.

The FDA and similar foreign governmental authorities have the authority to require the recall of certain commercialized products over which they exercise oversight in the event of material deficiencies or defects in design or manufacture or a public health/safety issue. In addition, foreign governmental bodies have the authority to require the recall of our products in the event of material deficiencies or defects in design or manufacture. Manufacturers may, under their own initiative, recall a product if any material deficiency is found. The FDA requires that certain recalls of medical devices be reported to the FDA within 10 working days after the recall is

initiated. We may initiate voluntary recalls involving our products in the future that we determine do not require us to notify the FDA. Companies are required to maintain certain records of recalls, even if they are not reportable to the FDA. If the FDA disagrees with our determinations, they could require us to report those actions as recalls. In addition, the FDA could bring an enforcement action against us based on our failure to report the recalls when they were conducted. A government-mandated or voluntary recall by us or one of our distributors could occur as a result of component failures, manufacturing errors, design or labeling defects or other deficiencies and issues. Once marketed, recalls of any of our products, including our precision medicine products, would divert managerial and financial resources and could have a material and adverse effect on our business, operating results, and financial condition. A future recall announcement could harm our reputation with customers and negatively affect our sales.

Our relationship with Avero Diagnostics may be challenged, and a successful challenge could adversely affect our operating structure.

We provide anatomic and molecular pathology testing through our affiliation with Mattison Pathology, LLP, a Texas limited liability partnership doing business as Avero Diagnostics, located in Lubbock and Dallas, Texas. The laws of certain states in which we operate or may operate in the future prohibit non-physician entities from practicing medicine, exercising control over physicians or engaging in certain practices such as fee-splitting with physicians. Although we believe that we have structured our affiliation with Avero Diagnostics to ensure that the physicians maintain exclusive authority regarding the delivery of medical care, there can be no assurance that these laws will be interpreted in a manner consistent with our practices or that other laws or regulations will not be enacted in the future that could have a material and adverse effect on our business, operating results, and financial condition. Regulatory authorities and other parties, including our associated physicians, may assert that, despite the management service agreement and other arrangements through which we operate, we are engaged in the prohibited corporate practice of medicine, and/or that our arrangement with Avero Diagnostics constitutes unlawful fee-splitting. If a corporate practice of medicine or fee-splitting law is interpreted in a manner that is inconsistent with our practices, we would be required to restructure or terminate our relationship with Avero Diagnostics to bring its activities into compliance with such law. A determination of noncompliance, the termination of or failure to successfully restructure this relationship could result in disciplinary action, penalties, damages, fines, and/or a loss of revenue, any of which could have a material and adverse effect on our business, operating results, and financial condition.

Defects or failures associated with our products could lead to recalls or safety alerts and negative publicity.

Manufacturing flaws, component failures, design defects, off-label uses, or inadequate disclosure of product-related information could result in an unsafe condition or the injury or death of a patient. These problems could lead to a recall of, or issuance of a safety alert relating to, our commercialized products, and result in significant costs and negative publicity. A material adverse event involving one of our products could result in reduced market acceptance and demand for all products within that brand, and could harm our reputation and our ability to market our products in the future. In some circumstances, material adverse events arising from or associated with the design, manufacture or marketing of our products could result in among other things, labeling changes reflecting the updated safety information, regulatory requirements to issue communications to prescribers and/or conduct additional studies, or the suspension or delay of regulatory reviews of our applications for new marketing authorizations. We also may undertake a voluntary recall of products, or temporarily shut down production lines based on performance relative to our own internal safety and quality monitoring and testing data. Any of these problems could disrupt our business and have a material and adverse effect on our business, operating results, and financial condition.

We may not comply with laws regulating the protection of the environment and health and human safety.

Our research and development involves, or may in the future involve, the use of hazardous materials and chemicals and certain radioactive materials and related equipment. If an accident occurs, we could be held liable for resulting damages, which could be substantial. We are also subject to numerous environmental, health and

workplace safety laws and regulations, including those governing laboratory procedures, exposure to blood-borne pathogens and the handling of biohazardous materials. Insurance may not provide adequate coverage against potential liabilities, and we do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us. Additional federal, state, and local laws and regulations affecting our operations may be adopted in the future. We may incur substantial costs to comply with, and substantial fines or penalties if we violate, any of these laws or regulations.

Our failure to comply with radio frequency regulations could impair our ability to commercially distribute and market our precision medicine product candidates in that country or region.

Our PIL Dx precision medicine product candidate under development includes a wireless radio frequency transmitter and receiver, and is therefore subject to equipment authorization requirements in the United States and elsewhere. In the United States and certain other countries, authorities often require advance clearance of radio frequency devices before they can be sold or marketed in these jurisdictions, subject to limited exceptions. Modifications to our precision medicine product candidate's design and specifications may require new or further marketing authorizations before we are permitted to market and sell modified precision medicine products. If we are unable to obtain any required marketing authorizations from the authorities responsible for the radio frequency regulations in these and other jurisdictions, the sale or use of our precision medicine product candidate could be prevented in these countries. Any such action could negatively affect our business, operating results, and financial condition.

The marketing, sale, and use of our products could result in substantial damages arising from product liability or professional liability claims that exceed our insurance coverage and resources.

The marketing, sale and use of our products could lead to product liability claims against us if someone were to allege that our test or other product failed to perform as it was designed, or caused harm to an individual, or if someone were to misinterpret test results. We may be subject to liability for errors in, a misunderstanding of, or inappropriate reliance upon, the information we provide as part of the results generated by our tests. For example, Innatal could provide a low-risk result for a chromosomal abnormality upon which a patient or physician may rely to make a conclusion about the health of the fetus, which may, in fact, have the condition because the Innatal result was a false negative. As another example, Preparent could provide a low-risk result regarding the carrier status of a disorder of an expectant parent upon which a patient or physician may rely to make a conclusion about the health of the fetus, which may, in fact, have the condition because the Preparent result was a false negative. If the resulting baby is born with the condition, the family may file a lawsuit against us claiming product liability or professional liability.

In addition, we may be subject to product liability claims and lawsuits, including potential class actions, alleging that our products have resulted in or could result in an unsafe condition or injury. The product candidates we are developing using our precision medicine platform are designed to be ingested, and there are a number of factors that could result in an unsafe condition or injury to, or death of, a patient with respect to these or other products that we sell. A product liability or professional liability claim could result in substantial damages and be costly and time-consuming for us to defend. Although we maintain product and professional liability insurance, our insurance may not fully protect us from the financial impact of defending against product liability or professional liability claims or any judgments, fines or settlement costs arising out of any such claims. Any product liability or professional liability claim brought against us, with or without merit, could increase our insurance rates or prevent us from securing insurance coverage in the future. Additionally, any product liability or professional liability lawsuit could harm our reputation, result in a cessation of our testing, or cause our partners to terminate existing agreements and potential partners to seek other partners, any of which could adversely impact our business, operating results, and financial condition.

Our operating results may fluctuate significantly, which could adversely impact the value of our common stock.

Our operating results, including our revenues, gross margin, profitability, and cash flows, have varied in the past and may vary significantly in the future, and period-to-period comparisons of our operating results may not be

meaningful. Accordingly, our results should not be relied upon as an indication of future performance. Our operating results, including quarterly financial results, may fluctuate as a result of a variety of factors, many of which are outside of our control. Fluctuations in our results may adversely impact the value of our common stock. Factors that may cause fluctuations in our financial results include, without limitation, those listed elsewhere in this "Risk Factors" section. In addition, our results may fluctuate due to the fact that we recognize costs as they are incurred, but there is typically a delay in the related revenue recognition as we record most revenue only upon receipt of payment. Accordingly, to the extent our revenues increase, we may experience increased costs unless and until the related revenues are recognized. In addition, as we increase our internal sales and marketing and research and development efforts, we expect to incur costs in advance of achieving the anticipated benefits of such efforts. We also may face competitive pricing or reimbursement rate pressures, and we may not be able to maintain our sales volume and/or reimbursement rates in the future, which would adversely affect our business, operating results, and financial condition.

We may engage in acquisitions that could disrupt our business, cause dilution to our stockholders, or reduce our financial resources.

We have in the past entered into, and may in the future enter into, transactions to acquire other businesses, products, or technologies. Successful acquisitions require us to correctly identify appropriate acquisition candidates and to integrate acquired products or operations and personnel with our own. Should we make an error in judgment when identifying an acquisition candidate, should the acquired operations not perform as anticipated, or should we fail to successfully integrate acquired technologies, operations, or personnel, we will likely fail to realize the benefits we intended to derive from the acquisition and may suffer other adverse consequences. Acquisitions involve a number of other risks, including:

- we may not be able to make such acquisitions on favorable terms or at all;
- the acquisitions may not strengthen our competitive position, and these transactions may be viewed negatively by customers or investors;
- we may decide to incur debt with debt repayment obligations that we are unable to satisfy or that could otherwise require the use of a significant portion of our cash flow;
- we may decide to issue our common stock or other equity securities to the stockholders of the acquired company, which would reduce the percentage ownership of our existing stockholders;
- we may incur losses resulting from undiscovered liabilities of the acquired business that are not covered by any indemnification we may obtain from the seller;
- the acquisitions may reduce our cash available for operations and other uses;
- the acquisitions may divert of the attention of our management from operating our existing business; and
- the acquisitions may result in charges to earnings in the event of any write-down or write-off of goodwill and other assets recorded in connection with acquisitions.

We cannot predict the number, timing or size of future acquisitions or the effect that any such transactions might have on our business, operating results, and financial condition.

Ethical, legal, and social issues related to the use of genetic information could reduce demand for our tests.

DNA testing, such as testing that is conducted using Innatal, Preparent and our other products, has raised ethical, legal and social issues regarding privacy and the appropriate uses of the resulting information. Governmental authorities could, for social or other purposes, limit or regulate the use of genomic information or genomic testing or prohibit testing for genetic predisposition to certain conditions, particularly for those that have no known cure. Patients may also refuse to use genetic tests even if permissible, for similar reasons; they may also refuse genetic testing due to concerns regarding eligibility for life or other insurance. Ethical and social concerns

may also influence U.S. and foreign patent offices and courts with regard to patent protection for technology relevant to our business. Although the Genetic Information Non-discrimination Act has criminalized the disallowance of health insurance on the basis of genetic information, modification or retraction of this federal law could dramatically reduce public demand for genetic testing. These and other ethical, legal and social issues may limit market acceptance of our tests or reduce the potential markets for products enabled by our technology platform, either of which could harm our business, operating results, and financial condition.

We may be significantly impacted by changes in tax laws and regulations or their interpretation.

U.S. and foreign governments continue to review, reform and modify tax laws. Changes in tax laws and regulations could result in material changes to the domestic and foreign taxes that we are required to provide for and pay. In addition, we are subject to regular audits with respect to our various tax returns and processes in the jurisdictions in which we operate. Errors or omissions in tax returns, process failures, or differences in interpretation of tax laws by tax authorities and us may lead to litigation, payments of additional taxes, penalties, and interest. On December 22, 2017, the Tax Cuts and Jobs Act of 2017, or TCJA, was passed into law. The TCJA has given rise to significant one-time and ongoing changes, including but not limited to a federal corporate tax rate decrease to 21% for tax years beginning after December 31, 2017, limitations on interest expense deductions, the immediate expensing of certain capital expenditures, the adoption of elements of a partially territorial tax system, new anti-base erosion provisions, a reduction to the maximum deduction allowed for net operating losses generated in tax years after December 31, 2017 and providing for indefinite carryforwards for losses generated in tax years after December 31, 2017. The legislation is unclear in many respects and could be subject to potential amendments and technical corrections, and will be subject to interpretations and implementing regulations by the Treasury and Internal Revenue Service, any of which could mitigate or increase certain adverse effects of the legislation. In addition, it is unclear how these U.S. federal income tax changes will affect state and local taxation. Generally, future changes in applicable tax laws and regulations, or their interpretation and application, could have a material and adverse effect on our business, operating results, and financial condition. We urge the purchasers of our common stock in this offering to consult with their legal and tax advisors with respect to such legislation and the potential tax consequences of investing in our common stock.

Our ability to utilize our net operating loss carryforwards and certain other tax attributes may be limited.

As of December 31, 2019, we had net operating loss, or NOL, carryforwards of approximately $ for federal income tax purposes, and $ for state income tax purposes. The federal NOLs will be carried forward indefinitely and the state NOLs begin expiring in 2019. Utilization of these NOLs depends on many factors, including our future income, which cannot be assured. Some of these NOLs could expire unused and be unavailable to offset our future income tax liabilities. In addition, under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, or the Code, and corresponding provisions of state law, if a corporation undergoes an “ownership change,” which is generally defined as a greater than 50 percentage point change, by value, in its equity ownership by 5% stockholders over a rolling three-year period, the corporation’s ability to use its pre-change NOLs and other pre-change tax attributes to offset its post-change income may be limited. If we determine that an ownership change has occurred and our ability to use our historical NOLs is materially limited, it could harm our future operating results by effectively increasing our future tax obligations. In addition, under the TCJA, federal NOLs incurred in 2018 and in future years may be carried forward indefinitely but generally may not be carried back and the deductibility of such NOLs is limited to 80% of taxable income.

Reimbursement Risks Related to Our Business

If third-party payors do not adequately reimburse for any new products, they might not be purchased or used, which may adversely affect our revenue and profits.

Our future revenues and profitability will depend heavily upon the availability of coverage and adequate reimbursement from governmental and other third-party payors, both in the United States and in foreign markets, for the use of any potential products, including a test for preeclampsia, precision medicine devices, and

pharmaceutical products. Coverage and reimbursement by governmental and commercial third-party payors may depend upon a number of factors, including the determination that the product and its use or administration for a particular patient is:

- a covered benefit;
- safe, effective, and medically necessary;
- appropriate for the specific patient;
- supported by guidelines established by the relevant professional college;
- approved in any states where specific assay approval is necessary;
- cost-effective; and
- neither experimental nor investigational.

Obtaining coverage and reimbursement approval for a product from each third-party payor is a time-consuming and costly process that could require us to provide supporting scientific, clinical, and cost-effectiveness data for the use of our products to each payor. We may not be able to provide data sufficient to satisfy third-party payors that the product should be covered and reimbursed. There is substantial uncertainty whether any particular payor will cover and reimburse the use of any product incorporating new technology. Even when a payor determines that a product is eligible for reimbursement, the payor may impose coverage limitations that preclude payment for some uses that are approved by the FDA or a comparable authority. Moreover, eligibility for coverage does not imply that any product will be reimbursed in all cases or at a rate that allows us to make a profit or even cover our costs. Interim payments for new products, if applicable, may also not be sufficient to cover our costs and may not be made permanent. In some instances, payment may only be obtained by engaging in lengthy and costly appeals processes. Reimbursement rates may vary according to the use of the product and the clinical setting in which it is used, may be based on payments allowed for lower-cost products that are already reimbursed, may be incorporated into existing payments for other products, may reflect budgetary constraints and/or imperfections in Medicare, Medicaid or other data used to calculate these rates. Net prices for products may be reduced by mandatory discounts or rebates required by government healthcare programs or by any future relaxation of laws that restrict imports of certain medical products from countries where they may be sold at lower prices than in the United States.

There have been, and we expect that there will continue to be, federal and state proposals to constrain expenditures for medical products, which may affect payments for our products. Governmental and private entities that establish reimbursement policies, including the Centers for Medicare and Medicaid Services, or CMS, frequently change product descriptors, coverage policies, product and service codes, payment methodologies and reimbursement values. Third-party payors often follow Medicare coverage policy and payment limitations in setting their own reimbursement rates, and both CMS and other third-party payors may have sufficient market power to demand significant price reductions. Due in part to actions by third-party payors, the healthcare industry is experiencing a trend toward containing or reducing costs through various means, including lowering reimbursement rates, limiting therapeutic class coverage, and negotiating reduced payment schedules with service providers for certain products.

Our inability to promptly obtain coverage and profitable reimbursement rates from third-party payors for our products could have a material and adverse effect on our business, operating results, and financial condition.

We may be unable to expand or maintain third-party payor coverage and reimbursement for our Innatal, Preparent, and other tests, or may be required to refund any reimbursements already received.

Our business depends on our ability to obtain or maintain adequate reimbursement coverage from third-party payors. Third-party reimbursement for our testing represents a significant portion of our revenues, and we expect third-party payors such as third-party commercial payors and government healthcare programs to continue to be

our most significant sources of payments in the foreseeable future. In particular, we believe that for us to achieve commercial success it will be necessary to gain acceptance from third-party payors for the screening of microdeletions and for use of NIPT in the average-risk pregnancy population, which population represents roughly 80% of the U.S. pregnancy market, and to obtain positive coverage determinations and favorable reimbursement rates from third-party payors for our tests. We do not expect to receive reimbursement for a significant number of Innatal tests for average-risk patients that we performed in the nine-month period ended September 30, 2019. In addition, it is to be determined whether and to what extent certain of our other products, including those under development, will be covered or reimbursed. If we are unable to obtain or maintain coverage or adequate reimbursement from, or achieve in-network status with, third-party payors for our existing or future tests or other products, our ability to generate revenues will be limited. For example, healthcare providers may be reluctant to order our tests or other products due to the potential of a substantial cost to the patient if coverage or reimbursement is unavailable or insufficient.

Leading professional societies may recommend alternatives to our tests in average-risk patient populations, which may provide a basis for third-party payors not to cover or reimburse our tests in those populations.

In making coverage determinations, third-party payors often rely on practice guidelines issued by professional societies. The American College of Obstetricians and Gynecologists, or ACOG, has issued updated guidelines recommending informing pregnant women that Non-Invasive Prenatal Screening, or NIPS, is the most sensitive screening option for trisomy 13, trisomy 18, and Down syndrome, as well as of the availability of the expanded use of NIPT to screen for clinically relevant copy number variants, or CNVs, in the context of counseling that includes the risks/benefits and limitations of screening for CNVs. A CNV is a genetic mutation in which a segment of the genome has been deleted or duplicated, including microdeletions in which a small segment of a chromosome is deleted. The International Society for Prenatal Diagnosis has issued guidelines that are supportive of performing NIPT in average-risk pregnancies, as well as high-risk pregnancies. The American College of Medical Genetics, or ACMG, has also provided support for the use of NIPT in the general population. However, the Society for Maternal Fetal Medicine, or SMFM, has issued guidelines for NIPT stating that, while all pregnant women should be informed of the option to receive NIPT, conventional screening methods, such as traditional serum screening, rather than NIPT, remain the most appropriate choice for first-line screening for average-risk pregnancies. Therefore, while we expect the ACOG and SMFM guidelines to result in an increase in the number of average-risk women who are informed of NIPT and that may request it as a result, not all third-party payors reimburse for NIPT for these average-risk patients.

Currently, Aetna, UnitedHealthcare, and a number of other third-party payors have negative coverage determinations for NIPT in average-risk patient populations, meaning that their policy is not to reimburse for NIPT for patients in the average-risk or general population. The SMFM guidelines also echoed a previous statement from SMFM that routine screening for microdeletions should not be performed. Many third-party payors do not cover microdeletions screening. We have experienced, and may continue to experience, a negative impact on third-party payors' coverage for Innatal for microdeletions, at least until additional validation data on the sensitivity and specificity of our tests becomes available. We may not be able to obtain positive coverage determinations for our tests. If third-party payors do not reimburse for NIPT for average-risk pregnancies or microdeletions in the future, our operating results would be adversely affected, particularly to the extent that we continue to perform large volumes of tests for which third-party payors do not cover.

New reimbursement methodologies applicable to our tests, including new CPT codes, may decrease reimbursement rates from third-party payors.

In the United States, the American Medical Association, or AMA, generally assigns specific billing codes for laboratory tests under a coding system known as Current Procedure Terminology, or CPT, which we and our ordering healthcare providers must use to bill and receive reimbursement for our molecular tests. Once the CPT code is established, CMS establishes payment levels and coverage rules under Medicare while private payors independently establish rates and coverage rules. A CPT code specific to NIPT for aneuploidies was implemented, effective January 1, 2015, and a CPT code for microdeletions was implemented, effective

January 1, 2017. CMS has established a pricing benchmark of $802 for aneuploidy and microdeletions testing. However, our microdeletions reimbursement has decreased under this new code because third-party payors are declining to reimburse under this new code or reimbursing at a much lower rate than we had previously received. Furthermore, we cannot guarantee that we will be able to negotiate favorable rates for this code or receive reimbursement at all if we are unable to collect and publish additional data and obtain positive coverage determinations for Innatal for microdeletions. In addition, effective January 1, 2019, the AMA approved the use of a CPT code for expanded carrier screening tests, which may similarly cause reimbursement for our Preparent expanded carrier screening tests to decline. We do not currently have assay-specific CPT codes assigned for all of our tests, and there is a risk that we may not be able to obtain such codes or, if obtained, we may not be able to negotiate favorable rates for such codes.

We currently submit for reimbursement using CPT codes based on the guidance of outside coding experts and legal counsel. There is a risk that the codes we currently submit may be rejected or withdrawn or that third-party payors will seek refunds of amounts that they claim were inappropriately billed based on either the CPT code used, or the number of units billed. In addition, third-party payors may not establish positive coverage policies for our tests or adequately reimburse for any CPT code we may use, or seek recoupment for testing previously performed, which have occurred in the past.

Billing disputes with third-party payors may decrease realized revenue and may lead to requests for recoupment of past amounts paid.

Payors dispute our billing or coding from time to time and we deal with requests for recoupment from third-party payors from time to time in the ordinary course of our business, and we expect these disputes and requests for recoupment to continue. Third-party payors may decide to deny payment or recoup payment for testing that they contend to have been not medically necessary, against their coverage determinations, or for which they have otherwise overpaid, and we may be required to refund reimbursements already received. We have entered into settlement agreements with commercial payors in order to settle claims related to past billing practices that have since been discontinued. For additional information regarding these disputes, see “Business—Reimbursement—Commercial Third-Party Payors.” Additionally, the Patient Protection and Affordable Care Act, as amended by the Healthcare and Education Reconciliation Act of 2010, or collectively, the ACA, enacted in March 2010, requires providers and suppliers to report and return any overpayments received from government payors under the Medicare and Medicaid programs within 60 days of identification. Failure to identify and return such overpayments exposes the provider or supplier to liability under federal false claims laws. Claims for recoupment also require the time and attention of our management and other key personnel, which can be a distraction from operating our business.

If third-party payors deny payment for testing, reimbursement revenue for our testing could decline. If a third-party payor successfully challenges that payment for prior testing was in breach of contract or otherwise contrary to policy or law, they may recoup payment, which amounts could be significant and would impact our operating results and financial condition, and it may decrease reimbursement going forward. We may also decide to negotiate and settle with a third-party payor in order to resolve an allegation of overpayment. Any of these outcomes, including recoupment or reimbursements, might require us to restate our financials from a prior period, which could have a material and adverse effect on our business, operating results, and financial condition.

“Most favored nation” provisions in contracts with third-party payors may limit potential for revenue growth and may lead to claims for recoupment.

Some of our contracts with third-party payors contain “most favored nation” provisions, pursuant to which we have agreed that we will not bill the third-party payor more than we bill any other third-party payor. These contract provisions limit the amount we are able to charge for our products and can negatively impact revenue. We monitor our billing and claims submissions for compliance with these contractual requirements with third-party payors. If we do not successfully manage compliance with these most favored nation provisions, we may be required to forego revenues from some third-party payors or reduce the amount we bill to each third-party payor

with a most favored nation clause in its contract that is violated, which would adversely affect our business, operating results, and financial condition. This situation could also subject us to claims for recoupment, which could ultimately result in an obligation to repay amounts previously earned.

When third-party payors deny coverage, we are often unable to collect from the patient or any other source and risk disputes if we attempt to do so.

If a third-party payor denies coverage, or if the patient has a large deductible or co-insurance amount, it may be difficult for us to collect from the patient, and we may not be successful in doing so. If we are in-network, we are often contractually prohibited from seeking payment from the patient. If we are out-of-network, we are often unable to collect the full amount of a patient's responsibility, despite our good faith efforts to collect. As a result, we cannot always collect the full amount due for our tests when third-party payors deny coverage, cover only a portion of the invoiced amount or the patient has a large deductible, which may cause payors to raise questions regarding our billing policies and patient collection practices. We believe that our billing policies and our patient collection practices are compliant with applicable laws; however, we have in the past received, and we may in the future receive, inquiries from third-party payors regarding our billing policies and collection practices in these circumstances. While we have addressed these inquiries as and when they have arisen, there is no guarantee that we will be successful in addressing such concerns, and if we are unsuccessful, this may result in a third-party payor deciding to reimburse for our tests at a lower rate or not at all, seeking recoupment of amounts previously paid to us, or bringing legal action to seek reimbursement of previous amounts paid. Any of such occurrences could cause reimbursement revenue for our testing, which constitutes the large majority of our revenue, to decline. Additionally, if we were required to make a repayment, such repayment could be significant, which could have a material and adverse effect on our business, operating results, and financial condition.

Our revenues may be adversely impacted if third-party payors withdraw coverage or provide lower levels of reimbursement due to changing policies, billing complexities or other factors.

We are in-network, or under contract, with some of the third-party payors from whom we receive reimbursement; this means that we have agreements with such third-party payors that govern approval or payment terms. However, these contracts do not guarantee reimbursement for all testing we perform. For example, many third-party payors with whom we have written agreements have policies that state they will not reimburse for use of NIPT for average-risk pregnancies or for the screening of microdeletions, or do not have a policy in place to reimburse for microdeletions screening. In addition, the terms of certain of our agreements require a physician or qualified practitioner's signature on test requisitions or require other controls and procedures prior to conducting a test. In particular, third-party payors have been increasingly requiring prior authorization to be obtained prior to conducting a test as a condition to reimbursing for the test. This has placed a burden on our billing operations as we have to dedicate resources to monitor that these prior authorization requirements are met and to conduct follow-up and address issues as they arise, and has also impacted our operating results, including our gross margins, since these requirements began to take effect in 2017. To the extent we or the healthcare providers ordering our tests do not follow the prior authorization requirements, we may be subject to claims for recoupment of reimbursement amounts previously paid to us, or may not receive some or all of the reimbursement payments to which we would otherwise be entitled. This has occurred in some cases in the past and may occur in the future, which could have a material and adverse effect on our business, operating results, and financial condition.

Where we are considered to be an out-of-network provider, which is the case with the largest third-party payors from whom we currently receive reimbursement, such third-party payors could withdraw coverage and decline to reimburse for our tests in the future, for any reason. They can also impose prior authorization requirements through the terms of the patients' health plans. Managing reimbursement on a case-by-case basis is time-consuming and contributes to an increase in the number of days it takes us to collect on accounts, which also increases our risk of non-payment. Negotiating reimbursement on a case-by-case basis also typically results in the receipt of reimbursement at a significant discount to the list price of our tests.

Even if we are being reimbursed for our tests, third-party payors may unilaterally review and adjust the rate of reimbursement, require co-payments from patients or stop paying for our tests. Government healthcare programs

and other third-party payors continue to increase their efforts to control the cost, utilization, and delivery of healthcare services by demanding price discounts or rebates and limiting coverage of, and amounts they will pay for, molecular tests. These measures have resulted in reduced payment rates and decreased utilization in the clinical laboratory industry. Because of these cost-containment measures, governmental and commercial third-party payors—including those that currently reimburse our tests—may reduce, suspend, revoke or discontinue payments or coverage at any time. Reduced reimbursement of our tests may harm our business, operating results, and financial condition.

Billing for clinical laboratory testing services is complex. We perform tests in advance of payment and without certainty as to the outcome of the billing process. In cases where we expect to receive a fixed fee per test due to our reimbursement arrangements, we may nevertheless encounter variable reimbursement, leading to disputes over pricing and billing. Each third-party payor typically has different billing requirements, and the billing requirements of many payors have become increasingly difficult to meet. Among the factors complicating our billing of third-party payors are:

- disparity in coverage among various payors;
- disparity in information and billing requirements among payors, including with respect to prior authorization requirements and procedures and establishing medical necessity; and
- incorrect or missing billing information, which is required to be provided by the ordering healthcare provider.

These risks related to billing complexities, and the associated uncertainty in obtaining payment for our tests, could harm our business, operating results, and financial condition.

Our status as an out-of-network provider with large commercial third-party payors may cause healthcare providers to avoid recommending our tests.

We are considered to be an out-of-network provider with respect to the largest commercial third-party payors from whom we currently receive reimbursement. Physician groups and other healthcare providers may view this negatively and may insist upon only using reference laboratories that are in-network with their patients' insurance companies. These types of decisions could reduce our revenue, and harm our financial condition.

Changes in government healthcare policy could increase our costs and negatively impact coverage and reimbursement for our tests by governmental and other third-party payors.

The U.S. government has shown significant interest in pursuing healthcare reform and reducing healthcare costs. Government healthcare policy has been and will likely continue to be a topic of extensive legislative and executive activity in the U.S. federal government and many U.S. state governments. As a result, our business could be affected by significant and potentially unanticipated changes in government healthcare policy, such as changes in reimbursement levels by government third-party payors. Any such changes could substantially impact our revenues, increase costs, and divert management attention from our business strategy. We cannot predict the impact of governmental healthcare policy changes on our future business, operating results, and financial condition.

In the United States, the ACA was signed into law in March 2010 and significantly impacted the U.S. pharmaceutical and medical device industries, including the diagnostics sector, in a number of ways. Among other things, the ACA expanded healthcare fraud and abuse laws such as the False Claims Act and the Anti-Kickback Statute, including but not limited to required disclosures of financial arrangements with physician customers, required reporting of discovered overpayments, lower thresholds for violations, new government investigative powers, and enhanced penalties for such violations. The ACA restricts insurers from charging higher premiums or denying coverage to individuals with pre-existing conditions, and requires insurers to cover certain preventative services without charging any copayment or coinsurance, including screening for lung,

breast, colorectal and cervical cancers. The ACA also created a new system of health insurance "exchanges" designed to make health insurance available to individuals and certain groups through state- or federally-administered marketplaces in addition to existing channels for obtaining health insurance coverage. In connection with such exchanges, certain "essential health benefits" are intended to be made more consistent across plans, setting a baseline coverage level. The states (and the federal government) have some discretion in determining the definition of "essential health benefits" and we do not know whether our tests or other products will fall into a benefit category deemed "essential" for coverage purposes across the plans offered in any or all of the exchanges. If any of our tests are not covered by plans offered in the health insurance exchanges, our business, operating results, and financial condition could be adversely affected.

There have been multiple attempts to repeal ACA or significantly scale back its applicability, which could negatively impact reimbursement for our testing, adversely affect our test volumes, and adversely affect our business, operating results, and financial condition. On December 14, 2018, a U.S. District Court Judge in the Northern District of Texas, or Texas District Court Judge, ruled that the entire ACA is invalid based primarily on the fact that the legislation enacted on December 22, 2017, informally known as the Tax Cuts and Jobs Act, repealed the tax-based shared responsibility payment imposed by the ACA, on certain individuals who fail to maintain qualifying health coverage for all or part of a year, which is commonly referred to as the "individual mandate." On December 17, 2019, the 5th Circuit Court of Appeals upheld the Texas District Court's ruling that the individual mandate was unconstitutional, but remanded the case back to the Texas District Court to determine whether the remaining provisions of the ACA were none the less valid. The repeal of this mandate means that fewer consumers will carry insurance coverage and therefore may be less likely to elect to receive our testing because they would be required to pay out of pocket for such tests. The attempts to repeal the ACA have resulted in considerable uncertainty and concern regarding, for example, a patient's election to undergo genetic screening and whether doing so may impact health insurance eligibility. Because it is unclear whether or how the ACA may change, and whether and to what extent NIPT, cancer screening or other genetic screening may be affected, we are uncertain how our business may be impacted.

In addition to the ACA, various healthcare reform proposals have also emerged from federal and state governments. The Protecting Access to Medicare Act of 2014, or PAMA, introduced a multi-year pricing program for services payable under the Clinical Laboratory Fee Schedule, or CLFS, that is designed to bring Medicare allowable amounts in line with the amounts paid by private payors. The rule issued by CMS to implement PAMA required certain laboratories to report third-party payor rates and test volumes. Since January 1, 2018, the Medicare payment rate for these tests is equal to the weighted median private payor rate reported to CMS, which for many tests is lower than the previous CLFS payment rates due to the often lower negotiated private payor rates applicable to large commercial laboratories that were required to report data to CMS. While we believe that the new rates will have minimal impact on our business, the rates have been the subject of controversy in the industry, including a lawsuit by the American Clinical Laboratory Association, and it is unclear whether and to what extent the new rates may change. The implementation of the PAMA rates has negatively impacted overall pricing and reimbursement for many clinical laboratory testing services. In addition, federal budgetary limitations and changes in healthcare policy, such as the creation of broad limits for our tests and requirements that beneficiaries of government health plans pay for, or pay for higher portions of, clinical laboratory tests or services received, could substantially diminish the utilization of our tests, increase costs and adversely affect our ability to generate revenues and achieve and sustain profitability.

We cannot predict whether future healthcare initiatives will be implemented at the federal or state level or how any such future legislation, regulation, or initiative may affect us. Current or potential future federal legislation and the expansion of government's role in the U.S. healthcare industry, as well as changes to the reimbursement amounts paid by third-party payors for our current and future tests, may adversely affect our test volumes and adversely affect our business, operating results, and financial condition.

Our revenues may be adversely affected if we are unable to successfully obtain reimbursement from the Medicare program and state Medicaid programs.

Our revenues from Medicare are currently very small and were only 3.0% of our total revenues in 2018, given our current product mix and the fact that our testing generally is not received by Medicare beneficiaries. As a result, we do not expect those revenues to change materially with regard to our current commercial products. However, our other products in development may be used by Medicare beneficiaries in the future. Medicare reimbursement can affect both Medicaid reimbursement, which is relevant to NIPT and carrier screening, and reimbursement from commercial third-party payors. Specifically, fee-for-service Medicaid programs generally do not reimburse at rates that exceed Medicare's fee-for-service rates, and many commercial third-party payors set their payment rates at a percentage of the amounts that Medicare pays for testing services. Medicare reimbursement rates are typically based on the CLFS, set by CMS pursuant to a statutory formula established by Congress. Our current Medicare Part B coverage was not set pursuant to a national coverage determination by CMS. Although we believe that coverage is available under Medicare Part B even without such a determination, we currently lack the certainty afforded by a formal national coverage determination by CMS. Thus, CMS or a regional Medicare Administrative Contractor, or MAC, could issue an adverse coverage determination as to Innatal or Preparent or our future products, if any, which could influence other third-party payors, including Medicaid, and could have a material and adverse effect on our business, operating results, and financial condition.

It is estimated that nearly half of all births in the United States are to state Medicaid program recipients. Each state's Medicaid program has its own coverage determinations related to our testing, and many state Medicaid programs do not provide their recipients with coverage for our testing. Even if our testing is covered by a state Medicaid program, we must be recognized as a Medicaid provider by the state in which the Medicaid recipient receiving the services resides in order for us to be reimbursed by a state's Medicaid program. In addition, many Medicaid programs have entered into agreements with managed care plans to have the managed care plans manage the provision of healthcare to that Medicaid program's beneficiaries. In order for us to enter into contracts to offer our tests to beneficiaries who are enrolled with a Medicaid managed care plan, we must first be recognized as a Medicaid provider in that state, and then contract with the applicable Medicaid managed care program. We are currently recognized by 43 states as a Medicaid provider. It is likely that we will not be able to be recognized as a provider by additional Medicaid programs because some states require that a provider maintain a physical laboratory in that state in order to be recognized; furthermore, some states have closed provider panels, which means that the state does not intend to expand its current provider network and therefore does not intend to recognize additional Medicaid providers. Even if we are recognized as a provider in a state, if Medicare's CLFS rate for our tests are low, the Medicaid reimbursement amounts are sometimes as low, or lower, than the Medicare reimbursement rate. In addition, as noted above, each state's Medicaid program has its own coverage determinations related to our testing, and many state Medicaid programs do not provide their recipients with coverage for our testing. As a result of all of these factors, our testing is not reimbursed or only reimbursed at a very low amount by many state Medicaid programs. In some cases, a state Medicaid program's reimbursement rate for our testing might be zero dollars. Low or zero-dollar Medicaid reimbursement rates for our tests could have a material and adverse effect on our business, operating results, and financial condition.

Federal legislation will increase the pressure to reduce prices of pharmaceutical products paid for by Medicare or may otherwise seek to limit healthcare costs.

The Medicare Modernization Act, or MMA, changed the way Medicare covers and reimburses for pharmaceutical products. The legislation introduced a new reimbursement methodology based on average sales prices for pharmaceutical products that are used in hospital settings or under the direct supervision of a physician and, starting in 2006, expanded Medicare coverage for pharmaceutical product purchases by the elderly. In addition, the MMA requires the creation of formularies for self-administered pharmaceutical products and provides authority for limiting the number of pharmaceutical products that will be covered in any therapeutic class and provides for plan sponsors to negotiate prices with manufacturers and suppliers of covered pharmaceutical products. As a result of the MMA and the expansion of federal coverage of pharmaceutical

products, we expect continuing pressure to contain and reduce costs of pharmaceutical products. Cost reduction initiatives and other provisions of this legislation could decrease the coverage and price that we may receive for any pharmaceutical product candidates that we may develop using our precision medicine platform in the future and could materially adversely affect our business, operating results and overall financial condition. While the MMA generally applies only to pharmaceutical product benefits for Medicare beneficiaries, private payors often follow Medicare coverage policy and payment limitations in setting their own reimbursement policies and any reduction in coverage or payment that results from the MMA may result in a similar reduction in coverage or payments from private payors.

If the validity of an informed consent from a patient is challenged, we could be precluded from billing for such patient's testing or be forced to stop performing certain tests or exclude the patient's data from clinical trial results.

We are required to ensure that all clinical data and blood samples that we receive have been collected from subjects who have provided appropriate informed consent for us to perform our testing, both commercially and in clinical trials. We seek to ensure that the subjects from whom the data and samples are collected do not retain or have conferred on them any proprietary or commercial rights to the data or any discoveries derived from them. A subject's informed consent could be challenged in the future, and the informed consent could prove invalid, unlawful, or otherwise inadequate for our purposes. Any such findings against us, or our partners, could deny us access to, or force us to stop, testing samples in a particular territory or could call into question the results of our clinical trials. We could also be precluded from billing third-party payors for tests for which informed consents are challenged, or we could be requested to refund amounts previously paid by third-party payors for such tests. We could become involved in legal challenges, which could require significant management and financial resources and adversely affect our operating results.

Regulatory Risks Related to Our Business

Our inability to obtain, on a timely basis or at all, any necessary marketing authorizations for new device products, or improvements to our current offerings, could adversely affect our future product commercialization and operating results.

Our planned medical device product candidates, and potentially some of our molecular testing products such as our planned preeclampsia test, are expected to be subject to regulation by the FDA, and numerous other federal and state governmental authorities. The process of obtaining regulatory approvals or clearances to market a medical device, particularly from the FDA and regulatory authorities outside the United States, can be costly and time-consuming, and approvals or clearances might not be granted for future products on a timely basis, if at all. To ensure ongoing customer safety, regulatory agencies such as the FDA may re-evaluate their current approval or clearance processes and may impose additional requirements. In addition, the FDA and other regulatory authorities may impose increased or enhanced regulatory inspections for domestic or foreign facilities involved in the manufacture of medical devices.

We may develop new medical devices in connection with our precision medicine platform and new molecular test candidates that are regulated by the FDA as medical devices. Unless otherwise exempted, medical devices must receive one of the following marketing authorizations from the FDA before being marketed in the United States: "510(k) clearance," *de novo* classification, or PMA. The FDA determines whether a medical device will require 510(k) clearance, *de novo* classification, or the PMA process based on statutory criteria that include the risk associated with the device and whether the device is similar to an existing, legally marketed product. In the 510(k) clearance process, before a device may be marketed, the FDA must determine that a proposed device is "substantially equivalent" to a legally-marketed "predicate" device, which includes a device that has been previously cleared through the 510(k) process, a device that was legally marketed prior to May 28, 1976 (pre-amendments device), a device that was originally on the U.S. market pursuant to an approved PMA and later down-classified, or a 510(k)-exempt device. To be "substantially equivalent," the proposed device must have the same intended use as the predicate device, and either have the same technological characteristics as the predicate

device or have different technological characteristics and not raise different questions of safety or effectiveness than the predicate device. Clinical data are sometimes required to support substantial equivalence. In the process of obtaining PMA approval, the FDA must determine that a proposed device is safe and effective for its intended use based, in part, on extensive data, including, but not limited to, technical, pre-clinical, clinical trial, manufacturing, and labeling data. The PMA process is typically required for devices that are deemed to pose the greatest risk, such as life-sustaining, life-supporting or implantable devices. The process to obtain either 510(k) clearance or PMA will likely be costly, time-consuming, and uncertain. However, we believe the PMA process is generally more challenging. Even if we design a product that we expect to be eligible for the 510(k) clearance process, the FDA may require that the product undergo the PMA process. There can be no assurance that the FDA will approve the marketing of any new medical device, product that we develop. Even if regulatory approval is granted, such approval may include significant limitations on indicated uses, which could materially and adversely affect the prospects of the new medical device, product.

If a medical device is novel and has not been previously classified by the FDA as Class I, II, or III, it is automatically classified into Class III regardless of the level of risk it poses. The Food and Drug Administration Modernization Act of 1997 established a route to market for low to moderate risk medical devices that are automatically placed into Class III due to the absence of a predicate device, called the "Request for Evaluation of Automatic Class III Designation," or the *de novo* classification procedure. This procedure allows a manufacturer whose novel device would automatically be classified into Class III to request down-classification of its medical device into Class I or Class II on the basis that the device presents low or moderate risk, rather than requiring the submission and approval of a PMA application.

FDA marketing authorization could not only be required for new products we develop, but also could be required for certain enhancements we may seek to make to our existing tests and other products. Delays in receipt of, or failure to obtain, marketing authorizations could materially delay or prevent us from commercializing our products or result in substantial additional costs that could decrease our profitability. In addition, even if we receive FDA marketing authorizations for a new or enhanced product, the FDA may condition, withdraw, or materially modify its marketing authorization.

If we fail to comply with laboratory licensing requirements, we could lose the ability to perform our tests or experience disruptions to our business.

We are subject to CLIA, a federal law that regulates clinical laboratories that perform testing on specimens derived from humans for the purpose of providing information for the diagnosis, prevention or treatment of disease. CLIA regulations require clinical laboratories to obtain a certificate and mandate specific standards in the areas of personnel qualifications, administration, and participation in proficiency testing, patient test management and quality assurance. CLIA certification is also required in order for us to be eligible to bill state and federal healthcare programs, as well as many private third-party payors, for our tests. To renew these certifications, we are subject to survey and inspection every two years. Moreover, CLIA inspectors may make random inspections of our clinical laboratory.

We are also required to maintain state licenses to conduct testing in our laboratories. We cannot provide assurance that state authorities will at all times in the future find us to be in compliance with all applicable laws. If a clinical laboratory is out of compliance, the state authority may suspend, restrict or revoke the license to operate the clinical laboratory, assess substantial civil money penalties, or impose specific corrective action plans. Any such actions could materially affect our business.

Moreover, several other states require that we hold licenses to test samples from patients in those states. We have obtained licenses from states where we believe we are required to be licensed. From time to time, we may become aware of other states that require out-of-state laboratories to obtain licensure in order to accept specimens from the state, and it is possible that other states do have such requirements or will have such requirements in the future. If we identify any other state with such requirements or if we are contacted by any other state advising us of such requirements, we expect to seek to comply with such requirements.

Any sanction imposed under CLIA, its implementing regulations, or state or foreign laws or regulations governing licensure, or our failure to renew a CLIA certificate, a state license or accreditation, could have a material and adverse effect on our business, operating results and financial condition. For a discussion of a recent inquiry from the State of Texas regarding our CLIA certification, see "Business—Legal Proceedings—Texas OIG Inquiry." CMS also has the authority to impose a wide range of sanctions, including revocation of the CLIA certification along with a bar on the ownership or operation of a CLIA-certified laboratory by any owners or operators of the deficient laboratory. If we were to lose our CLIA certification or required state licensure, we would not be able to operate our clinical laboratory and conduct our tests, in full or in particular states, which would adversely impact our business, operating results, and financial condition.

We are subject to costly and complex laws and governmental regulations.

Our precision medicine product candidates are subject to a complex set of regulations and rigorous enforcement, including by the FDA, U.S. Department of Justice, or DOJ, HHS, and numerous other federal, state, and non-U.S. governmental authorities. To varying degrees, each of these agencies requires us to comply with laws and regulations governing the development, testing, manufacturing, labeling, marketing, and distribution of our products. As a part of the regulatory process of obtaining marketing authorization for new products and modifications to existing products, we may conduct and participate in numerous clinical trials with a variety of study designs, patient populations, and trial endpoints. Unfavorable or inconsistent clinical data from existing or future clinical trials or the market's or FDA's perception of this clinical data, may adversely impact our ability to obtain product approvals, our position in, and share of, the markets in which we participate, and our business, operating results, and financial condition. We cannot guarantee that we will be able to obtain or maintain marketing authorization for our product candidates and/or enhancements or modifications to existing products, and the failure to maintain or obtain marketing authorization in the future could have a material and adverse effect on our business, operating results, financial condition.

Both before and after a product is commercially released, we and our products are subject to ongoing and pervasive oversight of government regulators. For instance, in the case of any product candidates subject to regulation by the FDA, including those products candidates in connection with our precision medicine platform, our facilities and procedures and those of our suppliers will be subject to periodic inspections by the FDA to determine compliance with applicable regulations. The results of these inspections can include inspectional observations on FDA's Form-483, warning letters, or other forms of enforcement. If the FDA were to conclude that we are not in compliance with applicable laws or regulations, or that any of our product candidates, if authorized for marketing, are ineffective or pose an unreasonable health risk, the FDA could ban products, withdraw marketing authorizations for such products, detain or seize adulterated or misbranded products, order a recall, repair, replacement, or refund of such products, refuse to grant pending marketing applications, require certificates of non-U.S. governments for exports, and/or require us to notify health professionals and others that the products present unreasonable risks of substantial harm to the public health. The FDA and other non-U.S. government agencies may also assess civil or criminal penalties against us, our officers, or employees and impose operating restrictions on a company-wide basis. The FDA may also recommend prosecution to the DOJ. Any adverse regulatory action, depending on its magnitude, may restrict us from effectively marketing and selling our products and limit our ability to obtain future marketing authorizations, and could result in a substantial modification to our business practices and operations.

Furthermore, we occasionally receive investigative demands, subpoenas, or other requests for information from state and federal governmental agencies, and we cannot predict the timing, outcome, or impact of any such investigations. See "Business—Legal Proceedings." Any adverse outcome in one or more of these investigations could include the commencement of civil and/or criminal proceedings, substantial fines, penalties, and/or administrative remedies, including exclusion from government reimbursement programs and/or entry into corporate integrity agreements with governmental agencies. In addition, resolution of any of these matters could involve the imposition of additional, costly compliance obligations. These potential consequences, as well as any adverse outcome from government investigations, could have a material and adverse effect on our business, operating results, and financial condition.

If we or our commercial partners act in a manner that violates healthcare laws or otherwise engage in misconduct, we could face substantial penalties and our business operations and financial condition could be adversely affected.

We are subject to healthcare fraud and abuse regulation and enforcement by both the U.S. federal government and the states in which we conduct our business, including:

- federal and state laws and regulations governing the submission of claims, as well as billing and collection practices, for healthcare services;
- the federal Anti-Kickback Statute, which prohibits, among other things, the knowing and willful solicitation, receipt, offer or payment of remuneration, directly or indirectly, in exchange for or to induce either the referral of an individual for, or the purchase, order or recommendation of, any good or service for which payment may be made under federal healthcare programs such as Medicare and Medicaid; a person does not need to have knowledge of the statute or specific intent to violate it to have committed a violation; a violation of the Anti-Kickback Statute may result in imprisonment for up to ten years and fines of up to $100,000 for each violation and administrative civil money penalties of $100,000 plus up to three times the amount of the remuneration paid; in addition, the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act;
- the federal False Claims Act which prohibits, among other things, the presentation of false or fraudulent claims for payment from Medicare, Medicaid, or other government-funded third-party payors discussed in more detail below;
- federal laws and regulations governing the Medicare program, providers of services covered by the Medicare program, and the submission of claims to the Medicare program, as well as the Medicare Manuals issued by CMS and the local medical policies promulgated by the Medicare Administrative Contractors with respect to the implementation and interpretation of such laws and regulations;
- the federal Stark Law, also known as the physician self-referral law, which, subject to certain exceptions, prohibits a physician from making a referral for certain designated health services covered by the Medicare program (and according to case law in some jurisdictions, the Medicaid program as well), including laboratory and pathology services, if the physician or an immediate family member has a financial relationship with the entity providing the designated health services; a person who attempts to circumvent the Stark Law may be fined up to approximately $165,000 for each arrangement or scheme that violates the statute; in addition, any person who presents or causes to be presented a claim to the Medicare or Medicaid programs in violation of the Stark Law is subject to civil monetary penalties up to approximately $25,000 per claim, additional fines of up to three times the amount of reimbursement claimed;
- the federal Civil Monetary Penalties Law, which, subject to certain exceptions, prohibits, among other things, the offer or transfer of remuneration, including waivers of copayments and deductible amounts (or any part thereof), to a Medicare or state healthcare program beneficiary if the person knows or should know it is likely to influence the beneficiary's selection of a particular provider, practitioner or supplier of services reimbursable by Medicare or a state healthcare program; any violation of these prohibitions may result in civil monetary penalties up to $20,000 for each wrongful act;
- the prohibition on reassignment by the program beneficiary of Medicare claims to any party;
- HIPAA, which, among other things, imposes criminal liability for executing or attempting to execute a scheme to defraud any healthcare benefit program, willfully embezzling or stealing from a healthcare benefit program, willfully obstructing a criminal investigation of a healthcare offense,

and knowingly and willfully falsifying, concealing or covering up a material fact or making false, fictitious or fraudulent statements relating to healthcare matters; similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;

- HIPAA, as amended by HITECH, and their implementing regulations, which imposes privacy, security and breach reporting obligations with respect to individually identifiable health information upon entities subject to the law, such as health plans, healthcare clearinghouses and certain healthcare providers, known as covered entities, and their respective business associates, individuals or entities that perform services for them that involve individually identifiable health information; HITECH also created new tiers of civil monetary penalties, amended HIPAA to make civil and criminal penalties directly applicable to business associates, and gave state attorneys general new authority to file civil actions for damages or injunctions in U.S. federal courts to enforce HIPAA and seek attorneys' fees and costs associated with pursuing federal civil actions;
- the federal transparency requirements under the Physician Payments Sunshine Act, created under the ACA, which requires, among other things, certain manufacturers of drugs, devices, biologics and medical supplies reimbursed under Medicare, Medicaid, or the Children's Health Insurance Program to annually report to CMS information related to payments and other transfers of value provided to physicians, certain other healthcare professionals beginning in 2022, and teaching hospitals and physician ownership and investment interests, including such ownership and investment interests held by a physician's immediate family members; we believe that we are currently exempt from these reporting requirements; we cannot assure you, however, that regulators, principally the federal government, will agree with our determination, and a determination that we have violated these laws and regulations, or a public announcement that we are being investigated for possible violations, could adversely affect our business;
- federal and state laws and regulations governing informed consent for genetic testing and the use of genetic material;
- state law equivalents of the above U.S. federal laws, such as the Stark Law, Anti-Kickback Statute and false claims laws, which may apply to items or services reimbursed by any third-party payor, including commercial insurers, and state data privacy and security laws and which may be more stringent than HIPAA; in addition, California enacted the CCPA on June 28, 2018, which takes effect on January 1, 2020; the CCPA creates individual privacy rights for California consumers and increases the privacy and security obligations of entities handling certain personal data; the CCPA provides for civil penalties for violations, as well as a private right of action for data breaches that is expected to increase data breach litigation; the CCPA may increase our compliance costs and potential liability, and many similar laws have been proposed at the federal level and in other states; in the event that we are subject to or affected by any such privacy and data protection laws, any liability from failure to comply with the requirements of these laws could adversely affect our financial condition; and
- similar healthcare laws and data protection laws in the European Union and other jurisdictions, including reporting requirements detailing interactions with and payments to healthcare providers and laws governing the privacy and security of certain protected information, such as the GDPR, which imposes obligations and restrictions on the collection and use of personal data relating to individuals located in the European Economic Area, or EEA, and the United Kingdom (including health data).

Furthermore, a development affecting our industry is the increased enforcement of the federal False Claims Act and, in particular, actions brought pursuant to the False Claims Act's "whistleblower" or "qui tam" provisions. The False Claims Act imposes liability for, among other things, knowingly presenting, or causing to be presented, a false or fraudulent claim for payment by a federal governmental payor program. The qui tam

provisions of the False Claims Act allow a private individual to bring civil actions on behalf of the federal government for violations of the False Claims Act and permit such individuals to share in any amounts paid by the defendant to the government in fines or settlement. When an entity is determined to have violated the False Claims Act, it is subject to mandatory damages of three times the actual damages sustained by the government, plus mandatory civil penalties of up to approximately $22,000 for each false claim. In addition, various states have enacted false claim laws analogous to the federal False Claims Act, and in some cases apply more broadly because many of these state laws apply to claims made to private payors and not merely governmental payors.

The rapid growth and expansion of our business may increase the potential for violating these laws or our internal policies and procedures designed to comply with these laws. The evolving interpretations of these laws and regulations by courts and regulators increase the risk that we may be alleged to be, or in fact found to be, in violation of these or other laws and regulations, including pursuant to private qui tam actions brought by individual whistleblowers in the name of the government as described above.

For example, in April 2018, we received a civil investigative demand from an Assistant U.S. Attorney for the Southern District of New York and a HIPAA subpoena issued by an Assistant U.S. Attorney for the Southern District of California. In May 2018, we received a subpoena from the State of New York Medicaid Fraud Control Unit. While we have not been served with a civil or criminal complaint, we are currently under federal civil and criminal investigations, and state civil investigations, regarding discontinued legacy billing practices for our NIPT and microdeletion tests and for the provision of potential kickbacks or inducements to physicians and patients. The civil investigations also include inquiries about our laboratory licenses, our enrollment in state Medicaid programs, and the laboratories that performed testing for us. We have met several times with representatives from the government entities conducting the related investigations, together as a group, to discuss the potential for a global resolution of all issues with all entities, which may include governmental entities and others that are not currently participating in such discussions. There can be no assurance as to whether or when the parties will finalize any negotiated resolution or what the final terms of such a resolution will be.

We cannot provide any assurance as to the ultimate outcome or that an adverse resolution would not have a material adverse effect on the our business, financial condition, and results of operations. Although we believe that many of our prior practices were common in our industry at the time and were structured in compliance with applicable laws, there can be no assurance that the government will agree with this position. If our operations, including the conduct of our employees, distributors, consultants and commercial partners, are found to have been in violation of the applicable laws or regulations, we may be subject to civil, criminal, and administrative penalties, damages, fines, disgorgement of profits, exclusion from participation in government programs, injunctions, contractual damages, and reputational harm, including harm to our relationships with our customers and employees. We may also be subject to a corporate integrity agreement, non-prosecution agreement, deferred prosecution agreement, or similar arrangement. Any or all of these outcomes could significantly and adversely affect our profits, future earnings, and our business or operations. Being excluded from participation in government programs could mean not being allowed to participate in Medicare or Medicaid, which programs accounted for approximately 3.0% and 12.1% of our total revenues in 2018, respectively, and could be expected to account for a larger percentage of our revenues in the future as our precision medicine programs advance. Furthermore, irrespective of the outcome, the existence of the investigation, unsealing of any *qui tam* complaint, and any subsequent or related lawsuit or settlement could negatively affect our reputation and harm our business, operating results, and financial condition. Moreover, the investigations have required and continue to require us to expend significant amounts to defend ourselves and serve as a distraction for management from operating other aspects of our business.

Even if we obtain regulatory authorizations, our marketed products will be subject to ongoing regulatory review. If we fail to comply with continuing U.S. and foreign regulations, we could lose any marketing authorizations we have obtained and our business would be seriously harmed.

Even after approval, any medical products we develop will be subject to ongoing regulatory review, including requirements for manufacturing, labeling, packaging, storage, advertising, promotion, sampling, record-keeping,

conduct of post-marketing studies, and submission of safety, efficacy, and other post- market information, including both federal and state requirements in the United States and requirements of comparable foreign regulatory authorities. Any marketing authorizations that we obtain for our product candidates may also be subject to limitations on the indicated uses for which the product may be marketed or to the conditions of approval, or contain requirements for potentially costly post-marketing testing, including Phase 4 clinical trials, and surveillance to monitor the safety and efficacy of the product candidate.

If a regulatory agency discovers previously unknown problems with a product, such as adverse events of unanticipated severity or frequency, or problems with the facility where the product is manufactured, or disagrees with the promotion, marketing or labeling of a product, such regulatory agency may impose restrictions on that product or us, including requiring withdrawal of the product from the market. If we fail to comply with applicable regulatory requirements, a regulatory agency or enforcement authority may, among other things:

- issue warning letters;
- impose civil or criminal penalties;
- suspend or withdraw marketing authorizations;
- suspend or terminate any of our clinical studies;
- refuse to approve pending applications or supplements to approved applications submitted by us;
- impose restrictions on our operations, including closing our contract manufacturers' facilities; or
- seize or detain products, or require a product recall.

Any government investigation of alleged violations of law could require us to expend significant time and resources in response, and could generate negative publicity. Any failure to comply with ongoing regulatory requirements may significantly and adversely affect our ability to commercialize and generate revenue from our products. If regulatory sanctions are applied or if regulatory authorization is withdrawn, our business will be seriously harmed.

Moreover, the policies of the FDA and of other regulatory authorities may change and additional government regulations may be enacted that could prevent, limit or delay regulatory authorization of our product candidates. We cannot predict the likelihood, nature, or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing authorization that we may have obtained and we may not achieve or sustain profitability.

Similarly, our commercial activities are subject to comprehensive compliance obligations under state and federal reimbursement, Sunshine Act, anti-kickback and government pricing regulations. If we make false price reports, fail to implement adequate compliance controls or our employees violate the laws and regulations governing relationships with healthcare providers, we could also be subject to substantial fines and penalties, criminal prosecution and debarment from participation in the Medicare, Medicaid, or other government reimbursement programs. For additional information regarding these risks, see "Risk Factors–If we or our commercial partners act in a manner that violates healthcare laws or otherwise engage in misconduct, we could face substantial penalties and our business operations and financial condition could be adversely affected." Noncompliance with European Union requirements regarding safety monitoring or pharmacovigilance can also result in significant financial penalties. Similarly, failure to comply with the European Union requirements regarding the protection of personal information can also lead to significant penalties and sanctions.

We and our commercial partners and contract manufacturers are subject to significant regulation with respect to manufacturing medical devices and therapeutic products. The manufacturing facilities on which we rely may not continue to meet regulatory requirements or may not be able to meet supply demands.

Entities involved in the preparation of medical devices and/or therapeutic products for clinical studies or commercial sale, including our manufacturers for the therapeutic products that we may develop, are subject to extensive regulation. Components of a finished medical device or therapeutic product approved for commercial sale or used in late-stage clinical studies must be manufactured in accordance with cGMP and/or QSR requirements. These regulations govern manufacturing processes and procedures (including record keeping) and the implementation and operation of quality systems to control and assure the quality of investigational products and products approved for sale. Poor control of production processes can lead to the introduction of contaminants or to inadvertent changes in the properties or stability of our product candidates that may not be detectable in final product testing. We, our collaboration partners or our contract manufacturers must supply all necessary documentation in support of an NDA, a BLA, a PMA, a 510(k) application, a request for *de novo* classification, or a Marketing Authorization Application, or MAA, on a timely basis and must adhere to cGMP regulations enforced by the FDA and other regulatory agencies through their facilities inspection program. Some of our contract manufacturers may have never produced a commercially approved pharmaceutical product and therefore have not been subject to the review of the FDA and other regulators. The facilities and quality systems of some or all of our collaboration partners and third-party contractors must pass a pre-approval inspection for compliance with the applicable regulations as a condition of regulatory approval of our drug and biologic product candidates and may be subject to inspection in connection with a MAA for any of our other potential product candidates. In addition, the regulatory authorities may, at any time, audit or inspect a manufacturing facility involved with the preparation of our product candidates or our other potential products or the associated quality systems for compliance with the regulations applicable to the activities being conducted. Although we oversee our contract manufacturers, we cannot control the manufacturing process of, and are completely dependent on, such contract manufacturing partners for compliance with these regulatory requirements. If these facilities do not pass a pre-approval plant inspection, marketing authorizations for the products may not be granted or may be substantially delayed until any violations are corrected to the satisfaction of the regulatory authority, if ever.

The regulatory authorities also may, at any time following approval or clearance of a product for sale, audit the manufacturing facilities of our collaboration partners and third-party contractors. If any such inspection or audit identifies a failure to comply with applicable regulations or if a violation of our product specifications or applicable regulations occurs independent of such an inspection or audit, we or the relevant regulatory authority may require remedial measures that may be costly and/or time-consuming for us or a third party to implement and that may include the temporary or permanent suspension of a clinical study or commercial sales or the temporary or permanent closure of a facility. Any such remedial measures imposed upon us or third parties with whom we contract could materially harm our business.

If we, our collaboration partners or any of our third-party manufacturers fail to maintain regulatory compliance, the FDA or other applicable regulatory authority can impose regulatory sanctions including, among other things, refusal to approve a pending application for a new product candidate, withdrawal of a marketing authorization or suspension of production. As a result, our business, operating results, and financial condition may be materially harmed.

Additionally, if supply from one approved manufacturer is interrupted, an alternative manufacturer will need to be qualified and we may need to obtain marketing authorization for a change in the manufacturer through submission of a PMA supplement, 510(k) pre-market notification, NDA or BLA supplement, MAA variation or other regulatory filing to the FDA or other foreign regulatory agencies, which could result in further delay.

These factors could cause us to incur additional costs and could cause the delay or termination of clinical studies, regulatory submissions, required marketing authorizations or commercialization of our products, including product candidates. Furthermore, if our suppliers fail to meet contractual requirements and we are unable to

secure one or more replacement suppliers capable of production at a substantially equivalent cost, our clinical studies may be delayed or we could lose potential revenue.

The FDA may modify its enforcement discretion policy with respect to LDTs in a risk-based manner, and we may become subject to extensive regulatory requirements and may be required to conduct additional clinical trials prior to continuing to sell our existing tests or launching any other tests we may develop, which may increase the cost of conducting, or otherwise harm, our business.

The FDA has adopted a policy of enforcement discretion with respect to LDTs whereby the FDA does not actively enforce its regulatory requirements for such tests. However, the FDA has stated its intention to modify its enforcement discretion policy with respect to LDTs. If there are changes in FDA policy, or if the FDA disagrees that our marketed tests are LDTs or that we are marketing our tests outside the scope of the FDA's current policy of enforcement discretion, we may become subject to extensive regulatory requirements and may be required to stop selling our existing tests or launching any other tests we may develop and to conduct additional clinical trials or take other actions prior to continuing to market our tests. If the FDA allows our tests to remain on the market but there is uncertainty about our tests, if they are labeled investigational by the FDA or if labeling claims the FDA allows us to make are very limited, orders from physicians or reimbursement may decline. The regulatory authorization process may involve, among other things, successfully completing additional clinical trials and submitting a 510(k) notice, or filing a *de novo* classification request or a PMA application with the FDA. If the FDA requires premarket review, our tests may not be cleared or approved on a timely basis, if at all. This could significantly increase the costs and expenses of conducting, or otherwise harm, our business.

We currently market all of our commercial molecular tests as LDTs and may in the future market other tests as LDTs. While we believe that we are currently in material compliance with applicable laws and regulations as historically enforced by the FDA, we cannot assure you that the FDA will agree with our determination. A determination that we have violated these laws and regulations, or a public announcement that we are being investigated for possible violations, could adversely affect our business, prospects, results of operations, and financial condition.

On July 31, 2014, the FDA notified Congress of its intent to modify, in a risk-based manner, its policy of enforcement discretion with respect to LDTs. On October 3, 2014, the FDA issued two draft guidances, entitled "Framework for Regulatory Oversight of Laboratory Developed Tests (LDTs)," or the Framework Guidance, and "FDA Notification and Medical Device Reporting for Laboratory Developed Tests (LDTs)." The Framework Guidance stated that the FDA intended to modify its policy of enforcement discretion with respect to LDTs in a risk-based manner consistent with the existing classification of medical devices. Thus, pursuant to the Framework Guidance, the FDA planned to begin to enforce its medical device requirements, including premarket submission requirements, on LDTs that have historically been marketed without FDA premarket review and oversight. Although the FDA halted finalization of the guidance in November 2016 to allow for further public discussion on an appropriate oversight approach to LDTs and to give congressional authorizing committees the opportunity to develop a legislative solution, the FDA could ultimately modify its current approach to LDTs in a way that would subject our products marketed as LDTs to the enforcement of regulatory requirements. For example, on January 13, 2017, the FDA issued a discussion paper on LDTs, which proposed a risk-based approach to oversight that would initially focus on premarket review of high-risk tests. If and when such changes to the regulatory framework occur, we could for the first time be subject to enforcement of regulatory requirements as a device manufacturer such as registration and listing requirements, medical device reporting requirements and the requirements of the FDA's QSR. Additionally, if and when the FDA begins to actively enforce its premarket submission regulations with respect to LDTs, we may be required to obtain premarket clearance or approval for our currently marketed tests and other products we plan to commercialize as LDTs. Moreover, legislative measures have recently been proposed in Congress that, if ultimately enacted, could provide the FDA with additional authority to require premarket review of and regulate LDTs. For example, in late 2018, the FDA proposed to Congress significant reforms to the agency's regulation of LDTs that would

bring all *in vitro* clinical tests, including LDTs, under a unified framework and would dramatically increase FDA oversight of LDTs. The FDA's proposal includes premarket review for certain tests, a precertification program to permit approval or clearance of a group of tests based on the review of a representative test, registration and notification requirements, quality system requirements, adverse event reporting, labeling requirements, and explicit authorities for the FDA to revoke the marketing authorization of tests and to take corrective action against test developers. Congress is considering draft legislation that largely incorporates the FDA's proposal and would increase FDA oversight of clinical laboratories and LDTs. The outcome and ultimate impact of such proposals on the business is difficult to predict at this time. Potential future increased regulation of our LDTs could also result in increased costs and administrative and legal actions for noncompliance, including warning letters, fines, penalties, product suspensions, product recalls, injunctions and other civil and criminal sanctions, which could have a material and adverse effect upon our business, operating results, and financial condition.

We may be adversely impacted by changes in laws and regulations, or in their application.

The industries in which we operate are highly regulated, and failure to comply with applicable regulatory, supervisory, accreditation, registration, or licensing requirements may adversely affect our business, operating results, and financial condition. The laws and regulations governing our research and marketing efforts are extremely complex and in many instances there are no clear regulatory or judicial interpretations of these laws and regulations, which increases the risk that we may be found to be in violation of these laws.

Furthermore, the industries in which we operate are growing, and regulatory agencies such as HHS or the FDA may apply heightened scrutiny to new developments. While we have taken steps to ensure compliance with current regulatory regimes in all material respects, given the nature of such regimes and our geographical diversity, there could be areas where we are noncompliant. Any change in the federal or state laws or regulations relating to our business may require us to implement changes to our business or practices, and we may not be able to do so in a timely or cost-effective manner. Should we be found to be noncompliant with current or future regulatory requirements, we may be subject to sanctions which could include changes to our operations, adverse publicity, substantial financial penalties and criminal proceedings, which may adversely affect our business, operating results, and financial condition by increasing our cost of compliance or limiting our ability to develop, market and commercialize our products. For additional information regarding these risks, see "Risk Factors—If we or our commercial partners act in a manner that violates healthcare laws or otherwise engage in misconduct, we could face substantial penalties and our business operations and financial condition could be adversely affected."

In addition, there has been a recent trend of increased U.S. federal and state regulation of payments made to physicians, which are governed by laws and regulations including the Stark Law, the federal Anti-Kickback Statute, and the federal False Claims Act as well as state equivalents of such laws. Among other requirements, the Stark Law requires laboratories to track, and places a cap on, non-monetary compensation provided to referring physicians.

While we have a compliance plan intended to address compliance with government laws and regulations, including applicable fraud and abuse laws and regulations such as those described in this risk factor, the evolving commercial compliance environment and the need to build and maintain robust and scalable systems to comply with regulations in multiple jurisdictions with different compliance and reporting requirements increases the possibility that we could inadvertently violate one or more of these requirements.

Changes in the way the FDA regulates the reagents, other consumables, and testing equipment we use when developing, validating, and performing our tests could result in delay or additional expense in bringing our tests to market or performing such tests for our customers.

Many of the sequencing instruments, reagents, kits and other consumable products used to perform our testing, as well as the instruments and other capital equipment that enable the testing, are offered for sale as analyte specific reagents, or ASRs, or for research use only, or RUO. ASRs are medical devices and must comply with FDA QSR

provisions and other device requirements, but most are exempt from 510(k) and PMA review. Products that are intended for RUO and are labeled as RUO are exempt from compliance with FDA requirements, including the approval or clearance and other product quality requirements for medical devices. A product labeled RUO but which is actually intended for clinical diagnostic use may be viewed by the FDA as adulterated and misbranded under the FD&C Act and subject to FDA enforcement action. The FDA has said that when determining the intended use of a product labeled RUO, it will consider the totality of the circumstances surrounding distribution and use of the product, including how the product is marketed and to whom. The FDA could disagree with a supplier's assessment that the supplier's products are RUOs, or could conclude that products labeled as RUO are actually intended for clinical diagnostic use, and could take enforcement action against the supplier, including requiring the supplier to cease offering the product while it seeks clearance or approval. Suppliers of RUO products that we employ in our other tests may cease selling their respective products, and we may be unable to obtain an acceptable substitute on commercially reasonable terms or at all, which could significantly and adversely affect our ability to provide timely testing results to our customers or could significantly increase our costs of conducting business.

Changes in funding for the FDA and other government agencies could hinder their ability to hire and retain key leadership and other personnel, or otherwise prevent new products from being developed or commercialized in a timely manner, which could negatively impact our business.

The ability of the FDA to review and clear or approve new products can be affected by a variety of factors, including government budget and funding levels, ability to hire and retain key personnel and accept the payment of user fees, and statutory, regulatory, and policy changes. Average review times at the agency have fluctuated in recent years as a result. In addition, government funding of other government agencies that fund research and development activities is subject to the political process, which is inherently fluid and unpredictable.

Disruptions at the FDA and other agencies may also increase the time necessary for new drugs and devices to be reviewed and/or cleared or approved by necessary government agencies, which would seriously harm our business. For example, over the last several years, including for 35 days beginning on December 22, 2018, the U.S. government has shut down several times and certain regulatory agencies, such as the FDA, have had to furlough critical FDA employees and stop critical activities. If a prolonged government shutdown occurs, it could significantly impact the ability of the FDA to timely review and process our regulatory submissions, which could seriously harm our business.

If the FDA does not conclude that certain of our product candidates satisfy the requirements for the Section 505(b)(2) regulatory approval pathway, or if the requirements for such product candidates under Section 505(b)(2) are not as we expect, the approval pathway for those product candidates will likely take significantly longer, cost significantly more and entail significantly greater complications and risks than anticipated, and in either case may not be successful.

We are developing proprietary product candidates, such as PGN-600, a GI-targeted toafacitinib, for which we may seek FDA approval through the Section 505(b)(2) regulatory pathway. We expect that PGN-600 will be regulated as a drug/device combination product under the drug provisions of the FD&C Act, enabling us to submit NDAs for approval of this product candidate. The Drug Price Competition and Patent Term Restoration Act of 1984, also known as the Hatch-Waxman Act, added Section 505(b)(2) to the FD&C Act. Section 505(b)(2) permits the filing of an NDA where at least some of the information required for approval comes from studies that were not conducted by or for the applicant and for which the applicant has not obtained a right of reference. Section 505(b)(2), if applicable to us under the FD&C Act, would allow an NDA we submit to the FDA to rely in part on data in the public domain or the FDA's prior conclusions regarding the safety and effectiveness of approved compounds, which could expedite the development program for our product candidate by potentially decreasing the amount of nonclinical and/or clinical data that we would need to generate in order to obtain FDA approval. If the FDA does not allow us to pursue the Section 505(b)(2) regulatory pathway as anticipated, we may need to conduct additional nonclinical studies and/or clinical trials, provide additional data and information, and meet additional standards for regulatory approval. If this were to occur, the time and

financial resources required to obtain FDA approval for this product candidate, and complications and risks associated with this product candidate, would likely substantially increase. Moreover, inability to pursue the Section 505(b)(2) regulatory pathway could result in new competitive products reaching the market more quickly than our product candidate, which would likely materially adversely impact our competitive position and prospects. Even if we are allowed to pursue the Section 505(b)(2) regulatory pathway, we cannot assure you that our product candidate will receive the requisite approval for commercialization.

In addition, notwithstanding the approval of a number of products by the FDA under Section 505(b)(2) over the last few years, certain pharmaceutical companies and others have objected to the FDA's interpretation of Section 505(b)(2). If the FDA's interpretation of Section 505(b)(2) is successfully challenged, the FDA may change its 505(b)(2) policies and practices, which could delay or even prevent the FDA from approving any NDA that we submit under Section 505(b)(2). In addition, the pharmaceutical industry is highly competitive, and Section 505(b)(2) NDAs are subject to certain requirements designed to protect the patent rights of sponsors of previously approved drugs that are referenced in a Section 505(b)(2) NDA. These requirements may give rise to patent litigation and mandatory delays in approval of our NDAs for up to 30 months or longer depending on the outcome of any litigation. It is not uncommon for a manufacturer of an approved product to file a citizen petition with the FDA seeking to delay approval of, or impose additional approval requirements for, pending competing products. If successful, such petitions can significantly delay, or even prevent, the approval of the new product. Even if the FDA ultimately denies such a petition, the FDA may substantially delay approval while it considers and responds to the petition. In addition, even if we are able to utilize the Section 505(b)(2) regulatory pathway, there is no guarantee this would ultimately lead to streamlined product development or earlier approval.

Moreover, even if our product candidate is approved under Section 505(b)(2), the approval may be subject to limitations on the indicated uses for which the product may be marketed or to other conditions of approval, or may contain requirements for costly post-marketing testing and surveillance to monitor the safety or efficacy of the product.

The misuse or off-label use of our products or product candidates may harm our reputation in the marketplace, result in injuries that lead to product liability suits or result in costly investigations, fines or sanctions by regulatory bodies if we are deemed to have engaged in the promotion of these uses, and any of these consequences could be costly to our business.

We are developing certain precision medicine product candidates, including pharmaceutical products and medical devices, which if authorized for marketing by the FDA or other regulatory authorities, will be authorized for use in specific indications and patient populations. We expect to train our marketing personnel and direct sales force not to promote our product candidates for uses outside of the FDA-approved or -cleared indications for use, which are sometimes referred to as "off-label uses." We cannot, however, prevent a physician from using our products off-label, when in the physician's independent professional medical judgment he or she deems it appropriate. There may be increased risk of injury to patients if physicians attempt to use our products off-label. Furthermore, the use of our products for indications other than those authorized for marketing by the FDA or any foreign regulatory body may not effectively treat such conditions, which could harm our reputation in the marketplace among physicians and patients.

If the FDA or any foreign regulatory body determines that our promotional materials or training constitute promotion of an off-label use, it could request that we modify our training or promotional materials or subject us to regulatory or enforcement actions, including the issuance or imposition of an untitled letter, a warning letter, injunction, seizure, civil fine, or criminal penalties. It is also possible that other federal, state or foreign enforcement authorities might take action under other regulatory authority, such as false claims laws, if they consider our business activities to constitute promotion of an off-label use, which could result in significant penalties, including, but not limited to, criminal, civil, and administrative penalties, damages, fines, disgorgement, exclusion from participation in government healthcare programs and the curtailment of our operations.

In addition, physicians may misuse our products or use improper techniques if they are not adequately trained, potentially leading to injury and an increased risk of product liability. If our products are misused or used with improper technique, we may become subject to costly litigation by our customers or their patients. As described above, product liability claims could divert management's attention from our core business, be expensive to defend and result in sizeable damage awards against us that may not be covered by insurance.

Risks Related to Our Intellectual Property

Third-party claims of intellectual property infringement could result in litigation or other proceedings, which would be costly and time-consuming, and could limit our ability to commercialize our products.

Our success depends in part on our freedom-to-operate with respect to the patents or intellectual property rights of third parties. We operate in industries in which there have been substantial litigation and other proceedings regarding patents and other intellectual property rights. Certain third parties, including our competitors or collaborators, may in the future assert that we are employing their proprietary technology without authorization or that we are otherwise infringing their intellectual property rights. The risk of intellectual property proceedings may increase as the number of products and the level of competition in our industry segments grows. Defending against infringement claims is costly and may divert the attention of our management and technical personnel. If we are unsuccessful in defending against patent infringement claims, we could be required to stop developing or commercializing products, pay potentially substantial monetary damages, and/or obtain licenses from third parties, which we may be unable to do on acceptable terms, if at all, and which may require us to make substantial royalty payments. In addition, we could encounter delays in product introductions while we attempt to develop alternative non-infringing products. Any of these or other adverse outcomes could prevent us from offering our tests, which would have a material and adverse effect on our business, operating results, and financial condition.

As we move into new markets and applications for our products, competitors in such markets may assert their patents and other proprietary rights against us as a means of blocking or slowing our entry into such markets or as a means to extract substantial license and royalty payments from us. Our competitors and others may have significantly stronger, larger, and/or more mature patent portfolios than we have, and additionally, our competitors may be better resourced and highly motivated to protect large, well-established markets that could be disrupted by our product candidates. In addition, future litigation may involve patent holding companies or other patent owners or licensees who have no relevant product revenues and against whom our own patents may provide little or no deterrence or protection.

In addition, our agreements with some of our customers, suppliers, and other entities with whom we do business require us to defend or indemnify these parties to the extent they become involved in infringement claims, including the types of claims described above. We could also voluntarily agree to defend or indemnify third parties if we determine it to be in the best interests of our business relationships. If we are required or agree to defend or indemnify third parties in connection with any infringement claims, we could incur significant costs and expenses that could adversely affect our business, operating results, and financial condition.

Because the industries in which we operate are particularly litigious, we are susceptible to intellectual property suits that could cause us to incur substantial costs or pay substantial damages or prohibit us from selling our precision medicine product candidates or conducting our other business.

There is a substantial amount of litigation over patent and other intellectual property rights in the industries in which we operate, including but not limited to the biotechnology, life sciences, pharmaceuticals, and medical device industries. Whether a product infringes a patent involves complex legal and factual issues, the determination of which is often uncertain. Searches typically performed to identify potentially infringed patents of third parties are often not conclusive and because patent applications can take many years to issue, there may be applications now pending, which may later result in issued patents which our current or future products may infringe. In addition, our competitors or other parties may assert that our precision medicine product candidates

and the methods they employ may be covered by patents held by them. If any of our products, including our precision medicine product candidates, infringes a valid patent, we could be prevented from manufacturing or selling it unless we can obtain a license or redesign the product to avoid infringement. A license may not always be available or may require us to pay substantial royalties. We also may not be successful in any attempt to redesign our product to avoid infringement. Infringement and other intellectual property claims, with or without merit, can be expensive and time-consuming to litigate and could divert our management's attention from operating our business.

Any inability to effectively protect our proprietary technologies could harm our competitive position.

Our success and ability to compete depend to a large extent on our ability to develop proprietary products and technologies and to maintain adequate protection of our intellectual property in the United States and elsewhere. The laws of some foreign countries do not protect proprietary rights to the same extent as the laws of the United States, and many companies have encountered significant challenges in establishing and enforcing their proprietary rights outside of the United States. These challenges can be caused by the absence of rules and methods for the establishment and enforcement of intellectual property rights outside of the United States. In addition, the proprietary positions of companies in the industries in which we operate generally are uncertain and involve complex legal and factual questions. This is particularly true in the diagnostics area where the U.S. Supreme Court has issued a series of decisions setting forth limits on the patentability of natural phenomena, natural laws, abstract ideas and their applications (see, *Mayo Collaborative v. Prometheus Laboratories (2012), Association for Molecular Pathology v. Myriad Genetics (2013), and Alice Corporation v. CLS Bank (2014),* which has made it difficult to obtain certain patents and to assess the validity of previously issued patents). This uncertainty may materially affect our ability to defend or obtain patents or to address the patents and patent applications owned or controlled by our collaborators and licensors.

We will be able to protect our proprietary rights from unauthorized use by third parties only to the extent that our proprietary technologies are covered by valid and enforceable patents or are effectively maintained as trade secrets. Any finding that our patents or patent applications are invalid or unenforceable could harm our ability to prevent others from practicing the related technology. We cannot be certain that we were the first to invent the inventions covered by pending patent applications or that we were the first to file such applications, and a finding that others have claims of inventorship or ownership rights to our patents and applications could require us to obtain certain rights to practice related technologies, which may not be available on favorable terms, if at all. There may be times when we choose to retain advisors with academic employers who limit their employees' rights to enter into agreements which provide the kind of confidentiality and assignment provisions congruent with our consulting agreements. We may decide that obtaining the services of these advisors is worth any potential risk, and this may harm our ability to obtain and enforce our intellectual property rights. In addition, our existing patents and any future patents we obtain may not be sufficiently broad to prevent others from practicing our technologies or from developing similar or alternative competing products, or design around our patented technologies, and may therefore fail to provide us with any competitive advantage. Furthermore, as our issued patents expire, we may lose some competitive advantage as others develop competing products that would have been covered by the expired patents, and, as a result, may adversely affect our business, operating results, and financial condition.

We may be required to file or defend infringement lawsuits and other contentious proceedings, such as *inter partes* reviews, reexaminations, oppositions, and declaratory judgement actions, to protect our interests, which can be expensive and time-consuming. We cannot assure you that we would prevail over an infringing third party, and we may become subject to counterclaims by such third parties. Our patents may be declared invalid or unenforceable, or narrowed in scope, as a result of such litigation or other proceedings. Some third-party infringers may have substantially greater resources than us and may be able to sustain the costs of complex infringement litigation more effectively than we can. Even if we have valid and enforceable patents, competitors may still choose to offer products that infringe our patents. Further, preliminary injunctions that bar future infringement by the competitor are not often granted; therefore, remedies for infringement are not often

immediately available. Even if we prevail in an infringement action, we cannot assure you that we would be fully or partially financially compensated for any harm to our business. We may be forced to enter into a license or other agreement with the third parties on terms less profitable or otherwise less commercially acceptable to us than those negotiated between a willing licensee and a willing licensor. Any inability to stop third-party infringement could result in loss in market share of some of our products, or lead to a delay, reduction, and/or inhibition of our development, manufacture, or sale of some of our products. A product produced and sold by a third-party infringer may not meet our or other regulatory standards or may not be safe for use, which could cause irreparable harm to the reputation of our products, which in turn could result in substantial loss in our market share and profits.

There is also the risk that others may independently develop similar or alternative technologies or design around our patented technologies, and our competitors or others may have filed, and may in the future file, conflicting patent claims covering technology similar or identical to ours. The costs associated with challenging conflicting patent claims could be substantial, and it is possible that our efforts would be unsuccessful and may result in a loss of our patent position and the issuance or validation of the competing claims. Should such competing claims cover our technology, we could be required to obtain rights to those claims at substantial cost.

Any of these factors could adversely affect our ability to obtain commercially relevant or competitively advantageous patent protection for our products.

"Submarine" patents may be granted to our competitors, which may significantly alter our launch timing expectations, reduce our projected market size, cause us to modify our product or process or block us from the market altogether.

The term "submarine" patent is used to denote a patent issuing from an application that was not published, publicly known or available prior to its grant. Submarine patents add substantial risk and uncertainty to our business. Submarine patents may issue to our competitors covering our precision medicine product candidates or our pipeline candidates and thereby cause significant market entry delay, defeat our ability to market our products or cause us to abandon development and/or commercialization of a product or molecule.

The issuance of one or more submarine patents may harm our business by causing substantial delays in our ability to introduce a product candidate or other product into the U.S. market.

If we are not able to adequately protect our trade secrets, know-how, and other proprietary information, the value of our technology and products could be significantly diminished.

We rely on trade secret protection and proprietary know-how protection for our confidential and proprietary information, and we have taken security measures to protect this information. These measures, however, may not provide adequate protection for our trade secrets, know-how, or other proprietary information. For example, although we have a policy of requiring our consultants, advisors and collaborators to enter into confidentiality agreements and our employees to enter into invention, non-disclosure and, where lawful, noncompete agreements, we cannot assure you that such agreements will provide for a meaningful protection of our trade secrets, know-how or other proprietary information in the event of any unauthorized use or disclosure of information, including as a result of breaches of our physical or electronic security systems, or as a result of our employees failing to abide by their confidentiality obligations during or upon termination of their employment with us. Any action to enforce our rights is likely to be time-consuming and expensive, and may ultimately be unsuccessful, or may result in a remedy that is not commercially valuable. These risks are heightened in countries where laws or law enforcement practices may not protect proprietary rights as fully as in the United States. Any unauthorized use or disclosure of, or access to, our trade secrets, know-how or other proprietary information, whether accidentally or through willful misconduct, could have a material and adverse effect on our programs, our business strategy, and on our ability to compete effectively.

If our trademarks and trade names are not adequately protected, we may not be able to build name recognition in our markets of interest, and our business may be adversely affected.

Failure to maintain our trademark registrations, or to obtain new trademark registrations in the future, could limit our ability to protect our trademarks and impede our marketing efforts in the countries in which we operate. We may not be able to protect our rights to trademarks and trade names which we may need to build name recognition with potential partners or customers in our markets of interest. As a means to enforce our trademark rights and prevent infringement, we may be required to file trademark claims against third parties or initiate trademark opposition proceedings. This can be expensive, particularly for a company of our size, and time-consuming, and we may not be successful. Our registered or unregistered trademarks or trade names may be challenged, infringed, circumvented, declared generic or determined to be infringing on other marks.

Our pending trademark applications in the United States and in other foreign jurisdictions where we may file may not be allowed or may subsequently be opposed. Even if these applications result in registration of trademarks, third parties may challenge our use or registration of these trademarks in the future. Over the long term, if we are unable to establish name recognition based on our trademarks and trade names, then we may not be able to compete effectively and our business may be adversely affected.

We may be subject to claims that our employees, consultants, or independent contractors have wrongfully used or disclosed confidential information of third parties.

We employ individuals who were previously employed at other companies in the industries in which we operate, including biotechnology or diagnostic companies. We may be subject to claims that we or our employees, consultants or independent contractors have inadvertently or willfully used or disclosed confidential information of our employees' former employers or other third parties. We may also be subject to claims that our employees' former employers or other third parties have an ownership interest in our patents. Litigation may be necessary to defend against these claims, and if we are unsuccessful, we could be required to pay substantial damages and could lose rights to important intellectual property. Even if we are successful, litigation could result in substantial costs to us and could divert the time and attention of our management and other employees.

Risks Related to Being a Public Company

We will incur significantly increased costs and devote substantial management time to reporting and other requirements as a result of operating as a public company.

As a public company, we will incur significant legal, accounting, and other expenses that we did not incur as a private company. For example, we will be subject to the reporting requirements of the Securities Exchange Act of 1934, or Exchange Act, and will be required to comply with the applicable requirements of the Sarbanes-Oxley Act and the Dodd-Frank Wall Street Reform and Consumer Protection Act, as well as rules and regulations subsequently implemented by the SEC and The Nasdaq Global Select Market, or Nasdaq, including the establishment and maintenance of effective disclosure and financial controls and changes in corporate governance practices. We expect that compliance with these requirements will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. Certain members of our management and other personnel have little experience managing a public company and preparing public filings. In addition, we expect that our management and other personnel will need to divert attention from operational and other business matters to devote substantial time to these public company requirements. In particular, we expect to incur significant expenses and devote substantial management effort toward ensuring compliance with the requirements of Section 404 of the Sarbanes-Oxley Act, which will increase when we are no longer an emerging growth company, as defined by the JOBS Act. We will need to hire additional accounting and financial staff with appropriate public company experience and technical accounting knowledge and may need to establish an internal audit function. We cannot predict or estimate the amount of additional costs we may incur as a result of becoming a public company or the timing of such costs. Additional compensation costs and any future equity awards will increase our compensation expense, which would increase our general and administrative expense and could adversely affect our profitability. We also expect that operating as a public company will make it more

difficult and more expensive for us to obtain director and officer liability insurance on reasonable terms. As a result, it may be more difficult for us to attract and retain qualified people to serve on our board of directors or our board committees or as executive officers.

We are an emerging growth company and the reduced disclosure requirements applicable to emerging growth companies may make our common stock less attractive to investors.

We are an emerging growth company. Under the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards until such time as those standards apply to private companies. We have elected to avail ourselves of this exemption and, as a result, will not be subject to the same implementation timing for new or revised accounting standards as are required of other public companies that are not emerging growth companies, which may make comparison of our consolidated financial information to those of other public companies more difficult.

For as long as we continue to be an emerging growth company, however, we intend to take advantage of certain other exemptions from various reporting requirements that are applicable to other public companies including, but not limited to, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. We cannot predict if investors will find our common stock less attractive because we will rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

We will remain an emerging growth company until the earliest of (a) the end of the fiscal year (i) following the fifth anniversary of the closing of this offering, (ii) in which the market value of our common stock that is held by non-affiliates exceeds $700 million and (iii) in which we have total annual gross revenues of $1.07 billion or more during such fiscal year, and (b) the date on which we issue more than $1 billion in non-convertible debt in a three-year period.

We have identified material weaknesses in our internal control over financial reporting. If our remedial measures are insufficient to address the material weaknesses, or if additional material weaknesses or significant deficiencies in our internal control over financial reporting are discovered or occur in the future, our consolidated financial statements may contain material misstatements and we could be required to restate our financial results, which could adversely affect our stock price and result in an inability to maintain compliance with applicable stock exchange listing requirements.

We have concluded that there were matters that constituted material weaknesses in our internal control over financial reporting. A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected and corrected on a timely basis. The material weaknesses related to a lack of (i) controls designed to reconcile tests performed and recognized as revenue to billed tests and (ii) appropriately designed or effectively operating controls over the proper recording of accounts payable and accrued liabilities.

To remediate these material weaknesses, we (i) have implemented and continue to implement certain system interfaces in order to verify the consistency between performed and billed tests, (ii) enhanced key controls over the timely identification and recording of liabilities, and (iii) hired executive management and plan to hire additional finance and accounting personnel with appropriate knowledge, experience and training commensurate with accounting and reporting requirements. We have not completed all of the corrective processes, procedures and related evaluation or remediation that we believe are necessary. The actions that we are taking are subject to ongoing senior management review, as well as audit committee oversight. We cannot assure you that these efforts will remediate our material weaknesses in a timely manner, or at all.

Although we plan to complete this remediation process as quickly as possible, we cannot at this time estimate how long it will take, and our measures may not prove to be successful in remediating the material weaknesses. If our remedial measures are insufficient to address the material weaknesses, or if additional material weaknesses or significant deficiencies in our internal control over financial reporting are discovered or occur in the future, our consolidated financial statements may contain material misstatements and we could be required to restate our financial results. In addition, if we are unable to successfully remediate the material weaknesses in our internal controls or if we are unable to produce accurate and timely financial statements, our stock price may be adversely affected, and we may be unable to maintain compliance with applicable stock exchange listing requirements.

Risks Related to This Offering and Ownership of Our Common Stock

An active trading market for our common stock may not develop or be sustainable, and investors may not be able to resell their shares at or above the initial public offering price.

Prior to this offering, there has been no public market for our common stock. The initial public offering price for our common stock will be determined through negotiations with the underwriters. An active trading market for our shares may never develop or be sustained following this offering. If an active market for our common stock does not develop, it may be difficult for our stockholders to sell shares purchased in this offering without depressing the market price for the shares, or at all.

The market price of our common stock is likely to be volatile, which could subject us to litigation.

The market price of our common stock is likely to be subject to wide fluctuations in response to numerous factors, many of which are beyond our control, such as those in this “Risk Factors” section and others including:

- actual or anticipated variations in our and our competitors’ operating results;
- announcements by us or our competitors of new products, product development results, significant acquisitions, strategic and commercial partnerships and relationships, joint ventures, collaborations or capital commitments;
- changes in reimbursement by current or potential payors;
- issuance of new securities analysts’ reports or changed recommendations for our stock;
- periodic fluctuations in our revenue, due in part to the way in which we recognize revenue;
- actual or anticipated changes in regulatory oversight of our products;
- developments or disputes concerning our intellectual property or other proprietary rights;
- commencement of, or our involvement in, litigation or other proceedings;
- announcement or expectation of additional debt or equity financing efforts;
- sales of our common stock by us, our insiders or our other stockholders;
- any major change in our management; and
- general economic conditions and slow or negative growth of our markets.

In addition, if the stock market experiences uneven investor confidence, the market price of our common stock could decline for reasons unrelated to our business, operating results or financial condition. The market price of our common stock might also decline in reaction to events that affect other companies within, or outside, our industry even if these events do not directly affect us. Some companies that have experienced volatility in the trading price of their stock have been the subject of securities class action litigation. If we are the subject of such litigation, it could result in substantial costs and a diversion of our management’s attention and resources.

We have broad discretion in the use of the net proceeds from this offering and may not use them effectively.

We cannot specify with any certainty the particular uses of the net proceeds that we will receive from this offering. Our management will have broad discretion in the application of the net proceeds from this offering for

any of the purposes described in "Use of Proceeds," and you will not have the opportunity as part of your investment decision to assess whether the net proceeds are being used appropriately. The failure by our management to apply these funds effectively could harm our business. Pending their use, we may invest the net proceeds from this offering in a manner that does not produce income or that loses value.

Insiders have substantial control over us and will be able to influence corporate matters.

Our current directors and executive officers, together with their affiliates, will beneficially own, in the aggregate, approximately % of our outstanding common stock after the completion of this offering, based on the number of shares outstanding as of , 2020. As of , 2020, Dr. Harry Stylli, our Chief Executive Officer and Chairman of our Board, owns % of our outstanding common stock on a fully diluted basis. As a result, after this offering, these stockholders will be able to exercise significant influence over all matters requiring stockholder approval, including the election of directors and approval of significant corporate transactions, such as a merger or other sale of our company or its assets. They may have interests that differ from yours and may vote in a way with which you disagree and that may be adverse to your interests. This concentration of ownership could limit stockholders' ability to influence corporate matters and may have the effect of delaying, deterring or preventing a third party from acquiring control over us, depriving our stockholders of an opportunity to receive a premium for their common stock as part of a sale of our company, and could negatively impact the value and market price of our common stock.

We do not intend to pay dividends on our capital stock, so any returns will be limited to changes in the value of our common stock.

While we have paid dividends to our stockholders in the past, we currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. In addition, our ability to pay cash dividends on our capital stock may be prohibited or limited by the terms of any current or future debt financing arrangement, including our credit and security agreement with Athyrium Opportunities III Co-Invest 1 LP. Any return to stockholders may therefore be limited to the increase, if any, of the price of our common stock.

If you purchase our common stock in this offering, you will incur immediate and substantial dilution.

The initial public offering price is substantially higher than the as-converted net tangible book value per share of our common stock as of September 30, 2019. Investors purchasing common stock in this offering will pay a price per share that substantially exceeds the book value of our total tangible assets after subtracting our total liabilities. As a result, investors purchasing common stock in this offering will incur immediate dilution of approximately $ per share, based on an initial public offering price of $ per share.

This dilution is due to the substantially lower price paid by our investors who purchased shares prior to this offering as compared to the price offered to the public in this offering, and any previous exercise of stock options granted to our service providers. In addition, as of , 2020, options to purchase shares of our common stock with a weighted average exercise price of approximately $ per share were outstanding. The exercise of any of these options would result in additional dilution. As a result of the dilution to investors purchasing shares in this offering, investors may receive less than the purchase price paid in this offering, if anything, in the event of our liquidation.

Future sales and issuances of our common stock or rights to purchase common stock, including pursuant to our equity incentive plans, could result in additional dilution of the percentage ownership of our stockholders and could cause the stock price of our common stock to decline.

We may issue additional securities following the completion of this offering. In the future, we may sell common stock, convertible securities, or other equity securities in one or more transactions at prices and in a manner we determine from time to time. We also expect to issue common stock to employees and directors pursuant to our equity incentive plans. If we sell common stock, convertible securities, or other equity securities in subsequent

transactions, or common stock is issued pursuant to equity incentive plans, investors may be materially diluted. New investors in such subsequent transactions could gain rights, preferences, and privileges senior to those of holders of our common stock.

Sales of a substantial number of shares of our common stock in the public market by our existing stockholders following this offering could cause the price of our common stock to decline.

Sales of a substantial number of shares of our common stock in the public market or the perception that these sales might occur could depress the market price of our common stock and could impair our ability to raise capital through the sale of additional equity securities. We are unable to predict the effect that sales may have on the prevailing market price of our common stock.

All of our executive officers and directors and our principal stockholders are subject to lock-up agreements with the underwriters of this offering that restrict the stockholders' ability to transfer shares of our common stock for at least 180 days from the date of this prospectus, except with the prior written consent of . Subject to certain limitations, approximately shares will become eligible for sale upon expiration of the 180-day lock-up period. In addition, shares issued or issuable upon exercise of options vested as of the expiration of the 180-day lock-up period will be eligible for sale at that time.

Of our issued and outstanding common stock, shares will be freely tradable after the expiration date of the lock-up agreements, excluding any shares acquired in this offering by persons who may be deemed to be our affiliates as defined in Rule 144 under the Securities Act. Shares of our common stock held by our affiliates will continue to be subject to the volume and other restrictions of Rule 144 under the Securities Act. Sales of a substantial number of these shares upon expiration of the lock-up agreements could adversely affect the trading price of our common stock.

If securities or industry analysts do not publish research or publish inaccurate or unfavorable research about our business, our stock price and trading volume could decline.

The trading market for our common stock will depend in part on the research and reports that securities or industry analysts publish about us or our business. If few securities analysts commence coverage of us, or if industry analysts cease coverage of us, the trading price and volume for our common stock could be adversely affected. If one or more of the analysts who cover us downgrade our common stock or publish inaccurate or unfavorable research about our business, our common stock price would likely decline. If one or more of these analysts cease coverage of us or fail to publish reports on us regularly, demand for our common stock could decrease, which might cause our common stock price and trading volume to decline.

Provisions in our seventh amended and restated certificate of incorporation and amended and restated bylaws and Delaware law might discourage, delay or prevent a change in control of our company or changes in our management and, therefore, depress the market price of our common stock.

Our seventh amended and restated certificate of incorporation and amended and restated bylaws, each to be in effect immediately prior to the completion of this offering, will contain provisions that could depress the market price of our common stock by acting to discourage, delay, or prevent a change in control of our company or changes in our management that the stockholders of our company may deem advantageous. These provisions, among other things:

- authorize the issuance of "blank check" preferred stock that our board of directors could use to implement a stockholder rights plan;
- prohibit stockholder action by written consent, which requires stockholder actions to be taken at a meeting of our stockholders, except for so long as specified current stockholders hold in excess of 50% of our outstanding common stock;
- prohibit stockholders from calling special meetings of stockholders;

- establish advance notice requirements for nominations for election to our board of directors or for proposing matters that can be acted upon by stockholders at annual stockholder meetings;
- provide the board of directors with sole authorization to establish the number of directors and fill director vacancies; and
- provide that the board of directors is expressly authorized to make, alter, or repeal our amended and restated bylaws.

In addition, Section 203 of the Delaware General Corporation Law may discourage, delay, or prevent a change in control of our company. Section 203 imposes certain restrictions on mergers, business combinations and other transactions between us and holders of 15% or more of our common stock.

For more information regarding these and other provisions, see "Description of Capital Stock."

Our seventh amended and restated certificate of incorporation and amended and restated bylaws will provide that the Court of Chancery of the State of Delaware will be the exclusive forum for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.

Our seventh amended and restated certificate of incorporation and amended and restated bylaws, each to be in effect immediately prior to the completion of this offering, will provide that, unless we consent in writing to the selection of an alternative forum, the sole and exclusive forum, to the fullest extent permitted by law, for (1) any derivative action or proceeding brought on our behalf, (2) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (3) any action asserting a claim against the company or any director or officer of the company arising pursuant to any provision of the Delaware General Corporation Law, (4) any action to interpret, apply, enforce or determine the validity of our seventh amended and restated certificate of incorporation or amended and restated bylaws, or (5) any other action asserting a claim that is governed by the internal affairs doctrine shall be the Court of Chancery of the State of Delaware or federal court located within the State of Delaware if the Court of Chancery does not have jurisdiction, in all cases subject to the court's having jurisdiction over indispensable parties named as defendants. A complaint asserting a cause of action under the Securities Act may be brought in state or federal court. With respect to the Exchange Act, only claims brought derivatively under the Exchange Act would be subject to the forum selection clause described above. The enforceability of similar choice of forum provisions in other companies' certificates of incorporation and bylaws has been challenged in legal proceedings, and it is possible that, in connection with any action, a court could find the choice of forum provisions contained in our seventh amended and restated certificate of incorporation and amended and restated bylaws to be inapplicable or unenforceable in such action. Although we believe these provisions benefit us by providing increased consistency in the application of Delaware law for the specified types of actions and proceedings, the provisions may have the effect of discouraging lawsuits against us or our directors and officers. Alternatively, if a court were to find the choice of forum provision contained in our seventh amended and restated certificate of incorporation and amended and restated bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could harm our business, financial condition, and operating results. For example, under the Securities Act, federal courts have concurrent jurisdiction over all suits brought to enforce any duty or liability created by the Securities Act, and investors cannot waive compliance with the federal securities laws and the rules and regulations thereunder, and the Court of Chancery of the State of Delaware recently determined that the exclusive forum provision of federal district courts of the United States for resolving any complaint asserting a cause of action arising under the Securities Act is not enforceable. However, this decision may be reviewed and ultimately overturned by the Delaware Supreme Court. If the Court of Chancery's decision were to be overturned, we would enforce the federal district court exclusive forum provision in our seventh amended and restated certificate of incorporation. Any person or entity purchasing or otherwise acquiring any interest in our shares of capital stock shall be deemed to have notice of and consented to this exclusive forum provision, but will not be deemed to have waived our compliance with the federal securities laws and the rules and regulations thereunder.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains "forward-looking statements" within the meaning of the federal securities laws, which statements are subject to substantial risks and uncertainties and are based on estimates and assumptions. All statements, other than statements of historical facts included in this prospectus, including statements concerning our plans, objectives, goals, strategies, future events, future revenues or performance, financing needs, plans or intentions relating to products and markets, and business trends and other information referred to under "Prospectus Summary," "Risk Factors," "Management's Discussion and Analysis of Financial Condition and Results of Operations," and "Business," are forward-looking statements. In some cases, you can identify forward-looking statements by terms such as "may," "might," "will," "objective," "intend," "should," "could," "can," "would," "expect," "believe," "design," "estimate," "predict," "potential," "plan," or the negative of these terms, and similar expressions intended to identify forward-looking statements. Forward-looking statements are not historical facts, and reflect our current views with respect to future events. Given the significant uncertainties, you should not place undue reliance on these forward-looking statements.

There are a number of risks, uncertainties, and other factors that could cause our actual results to differ materially from the forward-looking statements expressed or implied in this prospectus. Such risks, uncertainties, and other factors include, among others, the following risks, uncertainties, and factors:

- our ability to develop and commercialize molecular testing products as well as innovate in the field of precision medicine;
- the size and growth potential of the markets for our products and product candidates, and our ability to serve those markets;
- the rate and degree of market acceptance and clinical utility of our products and product candidates, if approved;
- coverage and reimbursement for our products and product candidates;
- the performance of third parties in connection with the development of our products and product candidates, including third-party suppliers;
- regulatory developments in the United States and foreign countries;
- our ability to obtain and maintain regulatory approval or clearance of our products and product candidates on expected timelines;
- our ability to improve and enhance our current products and product candidates;
- our plans to research, develop, and commercialize new products and product candidates;
- the development, regulatory approval, efficacy, and commercialization of competing products;
- the outcome of pending investigations and legal proceedings;
- the loss or retirement of key scientific or management personnel;
- our ability to develop and maintain our corporate infrastructure, including maintaining effective internal control;
- our use of the proceeds from this offering;
- our estimates regarding expenses, future revenue, capital requirements, and needs for additional financing; and
- our expectations regarding our ability to obtain and maintain intellectual property protection for our products, as well as our ability to operate our business without infringing the intellectual property rights of others.

There may be other factors that cause our actual results to differ materially from the forward-looking statements expressed or implied in this prospectus, including factors disclosed in the sections of this prospectus entitled “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and elsewhere. You should evaluate all forward-looking statements made in this prospectus in the context of these risks and uncertainties.

We caution you that the risks, uncertainties and other factors referred to above and elsewhere in this prospectus may not contain all of the risks, uncertainties, and other factors that may affect our future results and operations. Moreover, new risks will emerge from time to time. It is not possible for our management to predict all risks. In addition, we cannot assure you that we will realize the results, benefits, or developments that we expect or anticipate or, even if substantially realized, that they will result in the consequences or affect us or our business in the way expected.

All forward-looking statements in this prospectus apply only as of the date made and are expressly qualified in their entirety by the cautionary statements included in this prospectus. Except as required by law, we disclaim any intent to publicly update or revise any forward-looking statements to reflect subsequent events or circumstances.

INDUSTRY AND MARKET DATA

We obtained the industry, market, and competitive position data used throughout this prospectus from our own internal estimates and research, as well as from industry and general publications, and research, surveys, and studies conducted by third parties. Internal estimates are derived from publicly available information released by industry analysts and third-party sources, our internal research and our industry experience, and are based on assumptions made by us based on such data and our knowledge of the industry and market, which we believe to be reasonable. In addition, while we believe the industry, market, and competitive position data included in this prospectus is reliable and based on reasonable assumptions, we have not independently verified any third-party information, and all such data involve risks and uncertainties and are subject to change based on various factors, including those discussed in “Risk Factors.” These and other factors could cause results to differ materially from those expressed in the estimates made by the independent parties and by us.

USE OF PROCEEDS

We estimate that we will receive net proceeds of approximately $ million (or approximately $ million if the underwriters' option to purchase additional shares is exercised in full) from the sale of the shares of common stock offered by us in this offering, based on an assumed public offering price of $ per share (the midpoint of the range set forth on the cover of this prospectus), and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

Each $1.00 increase (decrease) in the assumed public offering price of $ per share (the midpoint of the range set forth on the cover of this prospectus) would increase (decrease) the net proceeds to us from this offering by $ million, assuming the number of shares of common stock offered by us, as set forth on the cover of this prospectus, remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, each increase (decrease) of 1,000,000 shares in the number of shares of common stock offered by us, as set forth on the cover of this prospectus, would increase (decrease) our net proceeds from this offering by $ million, assuming the assumed public offering price remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

We intend to use the net proceeds of this offering as follows:

- approximately $ million to support our operations;
- approximately $ million to invest in our research and development pipeline;
- approximately $ million to pay our obligations under settlement agreements; and
- the remainder for working capital and general corporate purposes.

Our expected use of proceeds from this offering represents our current intentions based on our present plans and business condition. As of the date of this prospectus, we cannot predict with certainty all of the particular uses for the proceeds to be received upon the completion of this offering or the amounts that we will actually spend on the uses set forth above. We may also use a portion of the proceeds to license, acquire, or invest in complementary businesses, technology, products, or assets. However, we have no current commitments to do so.

The amount and timing of our actual expenditures will depend on numerous factors, including the pace and results of our research and development efforts, the success and timing of our clinical trials, the timing and costs associated with our operations, including the manufacture and supply of products and product candidates, the timing of regulatory submissions, and any unforeseen cash needs. As a result, our management will have broad discretion over the use of the proceeds from this offering.

Pending the use of the proceeds from this offering, we may invest the proceeds in interest-bearing, investment-grade securities, certificates of deposit, or government securities.

DIVIDEND POLICY

Our Board did not declare any dividends in 2017 or 2018. On March 6, 2019, our Board declared aggregate cash dividends of $4,500,000, which dividends were paid on March 20, 2019.

We have no present intention to pay cash dividends on our common stock or our preferred stock. Any determination to pay dividends to holders of our common stock or our preferred stock will be at the discretion of our Board and will depend on many factors, including our financial condition, results of operations, liquidity, earnings, projected capital, and other cash requirements, legal requirements, restrictions in the agreements governing any indebtedness we may enter into, business prospects and other factors that our Board deems relevant. In addition, our credit and security agreement with Athyrium Opportunities III Co-Invest 1 LP contains, and any future credit agreement may contain, restrictions on payments of cash dividends.

CAPITALIZATION

The following table sets forth our cash and cash equivalents and capitalization as of September 30, 2019:

- on an actual basis;
- on a pro forma basis to give effect to:
  - the filing and effectiveness of our seventh amended and restated certificate of incorporation; and
  - the automatic conversion of all outstanding shares of our preferred stock into an aggregate of shares of common stock; and
- on a pro forma as-adjusted basis giving effect to (i) the pro forma items described immediately above and (ii) the issuance and sale of shares of our common stock in this offering, at the assumed public offering price of $ per share (the midpoint of the range set forth on the cover of this prospectus), and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The pro forma information below is illustrative only and our capitalization following the completion of this offering will be adjusted based on the actual initial public offering price and other terms determined at pricing. You should read the following table in conjunction with "Use of Proceeds," "Selected Consolidated Financial Data," "Management's Discussion and Analysis of Financial Condition and Results of Operations," and our financial statements and related notes included elsewhere in this prospectus.

	As of September 30, 2019		
	Actual	Pro Forma(1)	Pro Forma As-adjusted
	(unaudited) (in thousands, except share and per-share amounts)		
Cash and cash equivalents	$ 26,050	$	$
Total indebtedness(2)	71,903		
Stockholders' deficit:			
Common stock, $0.001 par value, 250,000,000 shares authorized, 52,192,245 shares issued, and 30,726,153 shares outstanding, actual; 175,294,616 shares issued and outstanding, pro forma and pro forma as-adjusted	52		
Series A and A-1 Preferred Stock, $0.001 par value, 5,620,000 shares authorized, 4,120,000 shares issued and outstanding, actual; no shares authorized, issued and outstanding, pro forma and pro forma as-adjusted	4		
Series B Preferred Stock, $0.001 par value, 101,118,787 shares authorized, 62,936,969 shares issued and outstanding, actual; no shares authorized, issued and outstanding, pro forma and pro forma as-adjusted	63		
Additional paid-in capital	191,223		
Accumulated deficit	(261,638)		
Treasury stock, at cost; 21,466,092 shares of common stock	(18,771)		
Total stockholders' deficit	(89,067)		
Total capitalization	$ 5,288	$	$

(1) Pro forma as-adjusted to give effect to the issuance and sale of shares of our common stock in this offering, at the assumed public offering price of $ per share (the midpoint of the range set forth on the cover of this prospectus), and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Each $1.00 increase (decrease) in the assumed public offering price of $ per share (the midpoint of the range set forth on the cover of this prospectus) would increase (decrease) each of our pro forma as-adjusted cash and cash equivalents, additional paid-in capital, total stockholders' deficit and total capitalization by approximately $ million, assuming the number of shares of common stock offered by us, as set forth on the cover of this prospectus, remains the

same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, each increase (decrease) of 1,000,000 shares in the number of shares of common stock offered by us would increase (decrease) each of our pro forma as-adjusted cash and cash equivalents, additional paid-in capital, total stockholders' (deficit) equity and total capitalization by approximately $ million, assuming the assumed public offering price remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

(2) Total indebtedness includes mortgages payable of $3,378 and a note payable of $68,525, each as of September 30, 2019.

The outstanding share information in the table above is based on shares of our common stock (including shares of our preferred stock outstanding on an as-converted basis), and excludes:

- shares of our common stock issuable upon the exercise of stock options outstanding under our 2011 Incentive Stock Plan, Second Amended and Restated 2012 Stock Plan, 2015 Consultant Stock Plan and 2018 Plan, at a weighted average exercise price of $ per share;
- shares of our common stock that we expect to be issued for vested restricted stock units under our 2018 Plan eligible for settlement on the date on which any restrictions imposed by the underwriters in connection with this offering have expired;
- shares of our common stock reserved for future issuance under our 2018 Plan, as well as any automatic increase in the number of shares of common stock reserved for future issuance pursuant to such awards under this plan;
- shares of our common stock to be reserved for future issuance under our 2020 Employee Stock Purchase Plan, which will become effective immediately prior to the completion of this offering, as well as any automatic increase in the number of shares of common stock reserved for future issuance under this benefit plan; and
- shares of our common stock (on an as-converted basis) issuable upon exercise of an outstanding Series B Preferred Stock Purchase Warrant at an exercise price of $ per share.

DILUTION

If you invest in the shares of our common stock in this offering, your ownership interest will be immediately diluted. Dilution represents the difference between the amount per share paid by investors in this offering and the as-adjusted net tangible book value per share of our common stock immediately after this offering. The data in this section are derived from our balance sheet as of September 30, 2019. As-converted net tangible book value per share is equal to our total tangible assets less the amount of our total liabilities, divided by the sum of the number of shares of our common stock that will be outstanding immediately prior to the completion of this offering (assuming the conversion of all outstanding shares of our preferred stock into shares of common stock). Our as-converted net tangible book value as of September 30, 2019 was $ million, or $ per share of common stock.

After giving effect to our receipt of the estimated net proceeds from the sale of our common stock in this offering, based on an assumed public offering price of $ per share (the midpoint of the range set forth on the cover of this prospectus), and after deducting the estimated underwriting discounts and commissions and other estimated offering expenses payable by us, our as-adjusted net tangible book value as of September 30, 2019 would have been $ million, or $ per share of our common stock. This represents an immediate increase in net tangible book value to our existing stockholders of $ per share and an immediate dilution to new investors in this offering of $ per share. The following table illustrates this per share dilution:

Assumed public offering price per share		$
Historical net tangible book value per share as of September 30, 2019	$	
As-converted net tangible book value per share as of September 30, 2019, after giving effect to the conversion of all preferred stock into shares of common stock	$	
Increase in net tangible book value per share attributable to new investors	$	
As-adjusted net tangible book value per share after this offering		$
Dilution per share to new investors		$

A $1.00 increase (decrease) in the assumed public offering price of $ per share would increase (decrease) our as-adjusted net tangible book value by $ million, the as-adjusted net tangible book value per share after this offering by $ and the dilution per share to new investors by $, assuming the number of shares offered by us, as set forth on the cover of this prospectus, remains the same, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, each increase (decrease) in the number of shares offered by us would increase (decrease) our as-adjusted net tangible book value by $ million, the as-adjusted net tangible book value per share after this offering by $ and the dilution per share to new investors by $, or $ if the underwriters exercise their option to purchase additional shares in full, assuming the assumed public offering price remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. If the underwriters fully exercise their option to purchase additional shares, as-adjusted net tangible book value after this offering would increase by approximately $ per share, and there would be an immediate dilution of approximately $ per share to new investors.

The following table presents, on an as-adjusted basis, as described above, the differences between the existing stockholders and the purchasers of shares in this offering with respect to the number of shares purchased from us, the total consideration paid, and the average price paid per share at an assumed public offering price of $ per share (the midpoint of the range set forth on the cover of this prospectus):

	Shares Purchased		Total Consideration		Average Price Per Share
	Number	Percent	Amount	Percent	
			(in thousands)		
Existing stockholders		%	$	%	$
New investors					
Total		100.0%	$	100.0%	$

If the underwriters were to fully exercise their option to purchase additional shares of our common stock from us, the percentage of shares of our common stock held by existing stockholders would be %, and the percentage of shares of our common stock held by new investors would be %.

The outstanding share information in the table above is based on shares of our common stock (including shares of our preferred stock outstanding on an as-converted basis), and excludes:

- shares of our common stock issuable upon the exercise of stock options outstanding under our 2011 Incentive Stock Plan, Second Amended and Restated 2012 Stock Plan, 2015 Consultant Stock Plan and 2018 Plan, at a weighted average exercise price of $ per share;
- shares of our common stock that we expect to be issued for vested restricted stock units under our 2018 Plan eligible for settlement on the date on which any restrictions imposed by the underwriters in connection with this offering have expired;
- shares of our common stock reserved for future issuance under our 2018 Plan, as well as any automatic increase in the number of shares of common stock reserved for future issuance pursuant to such awards under this plan;
- shares of our common stock to be reserved for future issuance under our 2020 Employee Stock Purchase Plan, which will become effective immediately prior to the completion of this offering, as well as any automatic increase in the number of shares of common stock reserved for future issuance under this benefit plan; and
- shares of our common stock (on an as-converted basis) issuable upon exercise of an outstanding Series B Preferred Stock Purchase Warrant at an exercise price of $ per share.

SELECTED CONSOLIDATED FINANCIAL DATA

The following tables set forth selected historical consolidated financial data as of and for the periods indicated. The historical consolidated statement of operations data for the years ended December 31, 2018 and 2019 and the consolidated balance sheet data as of December 31, 2018 are derived from our audited consolidated financial statements included elsewhere in this prospectus. The historical consolidated statements of operations data for the nine months ended September 30, 2018 and 2019 and the consolidated balance sheet data as of September 30, 2019 are derived from our unaudited interim condensed consolidated financial statements included elsewhere in this prospectus. Our unaudited interim condensed consolidated financial statements were prepared on the same basis as our audited consolidated financial statements and, in our opinion, reflect all adjustments, consisting only of normal recurring adjustments, that are necessary for the fair statement of our unaudited interim condensed consolidated financial statements.

The historical results presented below are not necessarily indicative of the results to be expected for any future period, and our interim results are not necessarily indicative of the results to be expected for the full year or any future period. This information should be read in conjunction with "Risk Factors," "Capitalization," "Management's Discussion and Analysis of Financial Condition and Results of Operations," and our financial statements and the related notes included elsewhere in this prospectus. Our financial statements are prepared in accordance with GAAP.

	Year Ended December 31,		Nine Months Ended September 30,	
	2018	2019	2018	2019
	(in thousands, except share and per share data)		(in thousands, except share and per share data) (unaudited)	
Revenue	$ 127,974	$	$ 131,979	$ 123,509
Cost of sales	92,076		69,358	75,531
Gross profit	35,898		62,621	47,978
Operating expenses:				
Research and development	48,712		34,230	48,791
Selling and marketing	50,187		36,998	45,510
General and administrative	51,238		38,577	44,823
Total operating expenses	150,137		109,805	139,124
Loss from operations	(114,239)		(47,184)	(91,146)
Interest expense	(9,091)		(6,794)	(6,872)
Equity loss of equity method investee	(2,327)		(932)	—
Interest and other income, net	1,801		1,404	457
Loss before taxes	(123,856)		(53,506)	(97,561)
Income tax expense	5,250		6,255	—
Net loss	$ (129,106)	$	$ (59,761)	$ (97,561)
Dividend paid to preferred stockholders	—		—	(3,652)
Stock dividend on exchange of Series A-1 to Series B Preferred Stock	—		—	(27,637)
Stock dividend on Series B Preferred Stock	—		—	(13,137)
Net loss attributable to common stockholders	$ (129,106)	$	$ (59,761)	$ (141,987)
Net loss per share attributable to common stockholders, basic and diluted	$ (4.49)	$	$ (2.07)	$ (4.74)
Weighted average number of shares outstanding, basic and diluted	28,773,598		28,834,005	29,973,919
Pro forma loss per share, basic and diluted (unaudited)(1)	$ (0.84)	$	$ (0.39)	$ (0.90)
Pro forma weighted average shares outstanding, basic and diluted (unaudited)(1)	154,289,598		154,350,005	157,862,753

(1) See Notes 2 and 11 to our audited consolidated financial statements and Notes 2 and 12 to our unaudited condensed consolidated financial statements included elsewhere in this prospectus for an explanation of the method used to calculate our net loss per share attributable to common stockholders, basic and diluted; pro forma net loss attributable to common stockholders, basic and diluted; and the weighted average shares used in the computation of these per share amounts.

	As of December 31, 2018	As of September 30, 2019
	(in thousands)	(unaudited)
Selected Balance Sheets Data:		
Cash and cash equivalents	$ 49,005	$ 26,050
Total assets	116,397	96,101
Total indebtedness(1)	70,846	71,903
Total liabilities	153,365	185,168
Preferred stock	20	67
Accumulated deficit	(142,469)	(261,638)
Total stockholders' deficit	(36,968)	(89,067)

(1) Total indebtedness includes mortgages payable of $3,551 and a note payable of $67,295, each as of December 31, 2018, and mortgages payable of $3,378 and a note payable of $68,525, each as of September 30, 2019.

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion and analysis of our financial condition and results of operations together with our audited and unaudited consolidated financial statements and the related notes and other financial information included elsewhere in this prospectus. Some of the information contained in this discussion and analysis or set forth elsewhere in this prospectus, including information with respect to our plans and strategy for our business, include forward-looking statements that involve risks and uncertainties. You should review the section titled "Risk Factors" for a discussion of important factors that could cause our actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Overview

We are a biotechnology company with an established track record of success in developing and commercializing molecular testing products as well as innovating in the field of precision medicine. We believe that we are a market-leading provider of *in vitro* molecular tests designed to improve lives by providing actionable information that helps guide patients and physicians in making critical and timely medical decisions during various life stages, such as family planning, pregnancy, or navigating a complex disease diagnosis. Our vision is to transform healthcare to become more precise and personal by improving diagnoses of disease and improving patient outcomes through localized treatment with targeted therapies. We apply a multi-omics approach, combining genomics, epigenomics, proteomics, and metabolomics, to our molecular testing products and to the development of a suite of investigational ingestible devices and drug/device combinations designed to provide precise diagnostic sampling and drug delivery solutions.

Since 2010, our molecular testing business has achieved consistent year-over-year test volume growth through our robust product portfolio and our strong commercial organization. Our internal core competencies, deep research and development pipeline and strategic acquisitions of novel technologies have fueled our innovation in women's health, supporting the development and launch of complementary molecular testing products that inform critical healthcare decision-making across a woman's lifetime.

In 2015, we launched both our Innatal Prenatal Screen, a NIPT offering, and our Preparent Carrier Test, followed by the launch of our Riscover Hereditary Cancer Test in 2017. We offer molecular tests with market-leading performance and turnaround times, supported by end-to-end workflow solutions that increase administrative efficiencies. Along with our comprehensive menu of molecular tests, we offer patients pre-test education, clear and timely results, and on-demand genetic counseling. We are committed to providing patients and physicians with empathetic communication and support during critical moments to help empower and prepare patients and their families to make critical life decisions.

We generate revenue by providing tests. Our molecular tests are provided through our certified CLIA or CAP accredited laboratory located in Ann Arbor, Michigan and we also provide anatomic and molecular pathology tests through our affiliation with Mattison Pathology, LLP, a Texas limited liability partnership doing business as Avero Diagnostics, located in Lubbock and Dallas, Texas. The focus of our commercial operations is to distribute our molecular tests and our anatomic and molecular pathology tests through our dedicated direct sales force. Distribution of our tests is supported by a field operations team who provide all logistical functions in receiving clinical samples at the laboratory for analysis. During the year ended December 31, 2018, we accessioned approximately 269,000 tests, and for the nine months ended September 30, 2019, we accessioned approximately 251,000 tests.

We generate revenue through providing our tests and receive payments for such tests from payors, laboratory distribution partners, and self-paying individuals. More than 95% of payments for our tests are received through reimbursement. We receive reimbursement from several distinct channels: commercial third-party payors, laboratory distribution partners, and government health benefits programs such as Medicare and Medicaid.

We are engaged in research and development activities with respect to molecular tests and precision medicine product candidates. Our molecular test portfolio and pipeline and our precision medicine product pipeline are each powered by a combination of symbiotic technology platforms exploiting advances in genetics, epigenetics, and proteomics, fortified by an innovative bioinformatics infrastructure. Our ecosystem is designed to enable rapid development and validation of products in an integrated fashion. We intend to continue to invest in our research and development activities as a public company. As a result, we expect to incur operating losses for the foreseeable future and may need to raise additional capital in order to fund our operations. Our ability to return to profitability will depend upon achieving our revenue growth objectives and successfully manage our costs.

Factors Affecting Our Performance

We believe there are several important factors that impact our commercial performance and results of operations, including:

Report Volume

We compete in the molecular testing market based upon several factors, including (i) the strong performance and short turnaround time of our integrated tests, (ii) the quality of our sales and marketing efforts with physicians, (iii) the quality of our end-to-end customer service and support solutions, and (iv) the availability of reimbursement for our tests. Our commercial team of more than 150 individuals actively engages with physicians and their staff to emphasize the clinical need for our products, provide education on the clinical value of our products, and facilitate the ability of physicians and their staff to order our tests. The volume of tests that we accession is one of the key performance indicators that we use to evaluate our business. A test is accessioned when we receive the test samples at our laboratory, the relevant information about the desired test is entered into our systems, and the samples are routed into the appropriate process flow. As the types and categories of tests that are covered by reimbursement increase or decrease, the volume of testing may correspondingly increase or decrease, respectively.

Reimbursement

Reimbursement fluctuations may occur due to a variety of factors, many of which are outside of our control, including, but not limited to:

- third-party payor coverage and, as we continually seek to transition to in-network coverage with commercial third-party payors, corresponding increases in our in-network covered lives;
- regulatory and medical society recommendations such CMS, ACOG, ACMG, and SMFM, that potentially lead to positive coverage determinations by commercial third-party payors and government health benefits programs for our tests;
- third-party payor medical coverage and administrative policies, including reimbursement rates published by CMS;
- future CPT code and medical procedure code changes, such as obtaining appropriate codes for our new molecular tests, including our expanded carrier screening panels, NIPT, and Exon carrier screening;
- regulatory and payor fee schedule changes for CPT codes with respect to our products;
- requirements to refund any reimbursements already received;
- the overall mix of payor class for our products sold;
- changes in physician ordering trends;
- the mix of our products sold;
- the geographic regions in which our products are sold;

- competition in our industries and any change in the competitive landscape of our industries, including potential consolidation; and
- future accounting pronouncements or changes in our accounting policies.

Gross Margin

Our gross margin is an important indicator of the operating performance of our business. Higher gross margins reflect the average selling price of our tests, as well as the operating efficiency of our laboratory operations. Reducing the costs of goods sold for our tests represents another important opportunity for innovation and is a significant area of focus for our research and development organization. We regularly evaluate our operations in order to determine whether we can reduce costs by developing new technologies, improving the efficiency of our assay and laboratory processes, modifying our processes to use materials and technologies that provide equal or greater quality at lower cost, and improving how we manage our inventory and negotiating favorable terms for our materials purchases. We are currently in the advanced stages of developing of our next generation Innatal Prenatal Screen, an improved platform with simplified and more cost-effective assay workflow, which we believe will allow us to substantially improve the gross margin of our NIPT. We also work with partner laboratories that complement our test portfolio offering, while developing in parallel new technologies that we expect could, over time, reduce our cost structure by internalizing the production of those tests when the commercial benefits dictate such conversion.

New Product Development

Our business involves significant investment in research and development activities for the development of new products which we believe are strategic complements to our product portfolio and drive long-term revenue growth. We have a substantial pipeline of new products and technologies, and we intend to continue investing in this pipeline going forward. We expect our investment in research and development to increase as we pursue regulatory approval of our product candidates and as we seek to expand our pipeline of product candidates. The achievement of key development milestones is a key factor in evaluating our performance.

Key Components of Our Results of Operations

Revenue

Substantially all of our revenue is derived from molecular laboratory tests, principally from the sale of Innatal, Preparent, and pathology molecular testing. We bill and collect from third-party payors, laboratory distribution partners, and self-paying individuals. Third-party payors include commercial third-party payors and government payors, such as Medicare and Medicaid in the United States. We bill for these tests rendered upon completion of the testing process and delivery of test results to the customer.

Due to potential future changes in insurance coverage policies, contractual rates, and other trends in the reimbursement of our tests, payments received for our tests may fluctuate significantly over time. Our estimate of variable consideration included in the transaction price is also impacted by our ongoing transition to in-network contracts with commercial payors. Historically, we have operated largely as an out-of-network provider of molecular tests; however, we continually seek to transition to in-network coverage with most third-party payors, which we believe is crucial to our growth and long-term success. This transition is ongoing and we are actively negotiating with a few remaining commercial payors. We will be contracted with national third-party commercial payors effective as of January 1, 2020 representing an estimated approximately 100 million covered lives.

While the negotiated fees under our in-network contracts with third-party payors are typically lower than the out-of-network list price of our tests, the percentage of tests allowed by payors traditionally increases in accordance with payors' medical policies. While we expect the reduction in average reimbursement per test from in-network pricing to reduce our per test revenue and gross margins in the near term, in-network pricing is more predictable than out-of-network pricing, and we intend to continue to mitigate the impact by implementing a strategic focus for our most profitable accounts.

Cost of Sales

Cost of sales includes the cost of materials, direct labor of laboratory personnel, third-party laboratory testing services, equipment, and infrastructure expenses associated with processing blood and other samples, quality control analyses, shipping charges to transport samples and specimens from ordering physicians, clinics, or individuals, and allocated overhead including information technology, or IT, costs. Infrastructure expenses include allocated facility and related occupancy costs. Costs associated with the performance of molecular tests are recorded as tests are processed.

The amount of cost of sales is related to our volume of accessioned tests, which is directly related to consumption of reagents and other laboratory support services. Therefore, growth in accessioned volume of tests results in increased cost of sales on an aggregate basis and potential modest reductions in cost of sales on a per test basis.

Research and Development

Research and development expenses consist primarily of costs associated with performing research and development activities to improve our tests, to reduce product costs, and to develop new products including our preeclampsia test and our precision medicine product candidates. Research and development expenses consist of personnel expenses, including salaries, bonuses, stock-based compensation expense, benefits, consulting costs, and allocated overhead costs. Research and development costs are expensed as incurred.

We plan to continue investing in research and development activities for the foreseeable future as we focus on developing innovative products, including our preeclampsia test and our precision medicine product candidates, through preclinical studies and clinical trials. We also expect our investment in research and development to increase as we pursue regulatory approval of our product candidates and as we seek to expand our pipeline of product candidates.

Selling and Marketing

Selling and marketing expenses consist primarily of personnel costs, including salaries, commissions, bonuses, stock-based compensation expense, and benefits for our sales and marketing team. Selling and marketing expenses also include costs for communication, advertising, conferences, other marketing events, and allocated overhead costs. We expect selling and marketing expense to continue to increase as we increase the size of our selling and marketing function to support the growth of our business.

General and Administrative

General and administrative expenses consist primarily of personnel costs, including salaries, bonuses, stock-based compensation expense, and benefits, for our finance and accounting, legal, human resources, and other administrative teams. Additionally, these expenses include professional fees of audit, legal, and recruiting services. Following the listing of our common stock on Nasdaq, we expect to continue to incur additional expenses as a result of operating as a public company, including costs to comply with the rules and regulations applicable to companies listed on a U.S. securities exchange and costs related to compliance and reporting obligations pursuant to the rules and regulations of the SEC. In addition, as a public company, we expect to incur increased expenses in the areas of insurance, investor relations, and professional services. As a result, we expect the dollar amount of our general and administrative expenses to increase for the foreseeable future. We expect, however, that our general and administrative expenses will decrease as a percentage of our revenue over time, although the percentage may fluctuate from period to period depending on fluctuations in our revenue and the timing and extent of our general and administrative expenses.

Loss on Equity Method Investment

Investments over which we are deemed to exert significant influence but not control are accounted for using the equity method of accounting. For investments accounted for under the equity method of accounting, our share of

income (losses) is included in income of investees in the consolidated statement of operations. Until June 2019, we owned a 20% interest in NeoSeq Ltd., a Cayman Islands exempt company, or NeoSeq, which operates a laboratory in China focused on fetal diagnostic operations for the Asia Pacific market and certain Middle Eastern countries. We evaluate our equity method investment for impairment whenever an event or change in circumstances occurs that may have a significant adverse impact on the carrying value of the investment. During 2018, NeoSeq completed a financing transaction that diluted our ownership in NeoSeq. Due to this transaction and continued losses, we recorded an impairment loss of $1.4 million in our consolidated statement of operations during the quarter ended December 31, 2018. In June 2019, we sold the NeoSeq investment to a third party.

Interest Expense

Interest expense is primarily attributable to borrowings under our Credit Agreement (as defined below). Interest expense is also attributable to our outstanding mortgages and capital lease agreements.

Interest and Other Income, Net

Interest and other income, net primarily consists of interest income earned from our cash and cash equivalents, and changes in fair value of short-term investments.

Income Tax Expense

We account for income taxes under the asset-and-liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax basis, and operating loss and tax credit carryforwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date.

We recognize the effect of income tax positions only if those positions are more likely than not of being sustained. Recognized income tax positions are measured at the largest amount that is greater than 50% likely of being realized. Changes in recognition or measurement are recognized in the period in which the change in judgment occurs. Valuation allowances are established, when necessary, to reduce deferred tax assets to the amount expected to be realized. During the nine months ended September 30, 2018, due to losses generated in 2018 and projected future taxable losses anticipated in the future, we established a 100% valuation allowance on net deferred tax assets and as a result recorded income tax expense of $6.3 million. Due to the valuation allowance on net deferred tax assets, no tax benefit was recorded for our net loss in the statements of operations for the nine months ended September 30, 2018 and 2019.

Results of Operations

Comparison of Nine Months Ended September 30, 2018 and 2019

	Nine Months Ended September 30,	
	2018	2019
	(in thousands) (unaudited)	
Statements of Operations Data:		
Revenue	$ 131,979	$ 123,509
Cost of sales	69,358	75,531
Gross profit	62,621	47,978
Operating expenses:		
Research and development	34,230	48,791
Selling and marketing	36,998	45,510
General and administrative	38,577	44,823
Total operating expenses	109,805	139,124
Loss from operations	(47,184)	(91,146)
Interest expense	(6,794)	(6,872)
Equity loss of equity method investee	(932)	—
Interest and other income, net	1,404	457
Loss before taxes	(53,506)	(97,561)
Income tax expense	6,255	—
Net loss	$ (59,761)	$ (97,561)

	Nine Months Ended September 30,	
	2018	2019
Percentage of Revenue Data:		
Revenue	100%	100%
Cost of sales	53	61
Gross profit	47	39
Operating expenses:		
Research and development	26	40
Selling and marketing	28	37
General and administrative	29	36
Total operating expenses	83	113
Loss from operations	(36)	(74)
Interest expense	(5)	(6)
Equity loss of equity method investee	(1)	—
Interest and other income, net	1	—
Loss before taxes	(41)	(79)
Income tax expense	5	—
Net loss	(45)%	(79)%

Revenue

	Nine Months Ended September 30, 2018	Nine Months Ended September 30, 2019	Increase/ (Decrease)	% Change
	(in thousands) (unaudited)			
Revenue	$ 131,979	$ 123,509	$ (8,470)	(6.4)%

Revenue was $123.5 million for the nine months ended September 30, 2019 compared to $132.0 million for the nine months ended September 30, 2018, a decrease of $8.5 million, or 6.4%. Effective January 1, 2019, we adopted ASC 606, using the modified retrospective transition method. As a result, revenue for reporting periods beginning after January 1, 2019 are presented under ASC 606, whereas prior period amounts have not been adjusted and continue to be reported in accordance with our historical accounting policy under ASC 605. Revenue for the nine months ended September 30, 2019 is therefore not comparable with the same period in the prior year.

The $8.5 million decrease in revenue was primarily due to an increase in accruals for reimbursement claims and settlements with payors of $7.5 million, which are recognized as reductions in revenue, during the nine months ended September 30, 2019 compared to the nine months ended September 30, 2018. The remainder of the decrease is primarily related to rate degradation due to payor policy changes partially offset by increased growth in accessioned volume of tests.

Cost of Sales

	Nine Months Ended September 30, 2018	Nine Months Ended September 30, 2019	Increase/ (Decrease)	% Change
	(in thousands) (unaudited)			
Cost of sales	$ 69,358	$ 75,531	$ 6,173	8.9%

Cost of sales was $75.5 million for the nine months ended September 30, 2019 compared to $69.4 million for the nine months ended September 30, 2018, an increase of $6.2 million, or 8.9%.

The increase was primarily due to higher labor and laboratory operations expenses related to growth in accessioned volume of tests. As a percentage of revenue, cost of sales was 52.6% for the nine months ended September 30, 2018, compared to 61.2% for the nine months ended September 30, 2019. The increase was due primarily to change in the mix of tests accessioned between each period.

Research and Development Expenses

	Nine Months Ended September 30, 2018	Nine Months Ended September 30, 2019	Increase/ (Decrease)	% Change
	(in thousands) (unaudited)			
Research and development	$ 34,230	$ 48,791	$ 14,561	42.5%

Research and development expenses were $48.8 million for the nine months ended September 30, 2019 compared to $34.2 million for the nine months ended September 30, 2018, an increase of $14.6 million, or 42.5%.

This increase in research and development expenses was primarily attributable to a $5.5 million increase in consulting costs, as well as a $4.8 million increase in salaries and personnel-related costs, $3.6 million increase in supplies costs, and $0.7 million increase in other expenses.

The following table summarizes the changes in research and development expenses from the nine months ended September 30, 2018 to the nine months ended September 30, 2019, with costs broken down by program:

	Nine Months Ended September 30,	
	2018	2019
	(in thousands) (unaudited)	
Molecular Testing	$ 16,933	$ 24,695
Precision Medicine	17,297	24,096
Total research and development expenses	$ 34,230	$ 48,791

Selling and Marketing Expenses

	Nine Months Ended September 30,		Increase/ (Decrease)	% Change
	2018	2019		
	(in thousands) (unaudited)			
Selling and marketing	$ 36,998	$ 45,510	$ 8,512	23.0%

Selling and marketing expenses were $45.5 million for the nine months ended September 30, 2019 compared to $37.0 million for the nine months ended September 30, 2018, an increase of $8.5 million, or 23.0%.

Approximately $5.6 million of the increase is attributable to higher salaries and personnel costs, particularly within the sales function. The remainder of the increase is primarily associated with increases of $1.1 million in consulting fees, largely related to marketing consulting, $1.1 million in advertising, promotions, trade shows, and conferences, $0.8 million in travel and entertainment costs, offset by a $0.1 million decrease in depreciation.

General and Administrative Expenses

	Nine Months Ended September 30,		Increase/ (Decrease)	% Change
	2018	2019		
	(in thousands) (unaudited)			
General and administrative	$ 38,577	$ 44,823	$ 6,246	16.2%

General and administrative expenses were $44.8 million for the nine months ended September 30, 2019 compared to $38.6 million for the nine months ended September 30, 2018, an increase of $6.2 million, or 16.2%.

Approximately $3.1 million of the increase is attributable to higher salaries and personnel costs. The remainder of the increase is primarily associated with increases of $1.5 million in costs related to the preparation for the opening of a new genetics laboratory, $1.0 million in facilities costs, $0.6 million in billing reimbursement and credentialing services, and $0.1 million in other general and administrative costs. These increases were partially offset by a decrease of $0.1 million in consulting costs.

Interest Expense

	Nine Months Ended September 30, 2018	Nine Months Ended September 30, 2019	Increase/ (Decrease)	% Change
	(in thousands) (unaudited)			
Interest expense	$ (6,794)	$ (6,872)	$ 78	1.1%

Interest expense increased by less than $0.1 million, or 1.1%, from the nine months ended September 30, 2018 to the nine months ended September 30, 2019.

Equity Loss of Equity Method Investee

	Nine Months Ended September 30, 2018	Nine Months Ended September 30, 2019	Increase/ (Decrease)	% Change
	(in thousands) (unaudited)			
Equity loss of equity method investee	$ (932)	$ —	$ (932)	(100.0)%

Equity loss of equity method investee decreased by $0.9 million from the nine months ended September 30, 2018 to the nine months ended September 30, 2019. This decrease in equity loss of equity method investee was the result of the divestiture of our investment in NeoSeq, which we sold to a third party during June 2019.

Interest and Other Income, Net

	Nine Months Ended September 30, 2018	Nine Months Ended September 30, 2019	Increase/ (Decrease)	% Change
	(in thousands) (unaudited)			
Interest and other income, net	$ 1,404	$ 457	$ (947)	(67.5)%

Interest and other income, net decreased by $0.9 million from the nine months ended September 30, 2018 to the nine months ended September 30, 2019, due to a decrease in short-term investments during 2019.

Income Tax Expense

	Nine Months Ended September 30, 2018	Nine Months Ended September 30, 2019	Increase/ (Decrease)	% Change
	(in thousands) (unaudited)			
Income tax expense	$ 6,255	$ —	$ (6,255)	(100.0)%

Income tax expense was $6.3 million for the nine months ended September 30, 2018 and $0 for the nine months ended September 30, 2019, a 100.0% decrease. During the nine months ended September 30, 2018, due to losses generated in 2018 and projected future taxable losses anticipated in the future, we established a 100.0% valuation allowance on net deferred tax assets and as a result recorded income tax expense of $6.3 million. Due to the valuation allowance on net deferred tax assets, no tax benefit was recorded for our net loss.

Comparison of Year Ended December 31, 2018 and 2019

	Year Ended December 31,	
	2018	2019
	(in thousands)	
Statements of Operations Data:		
Revenue	$ 127,974	$
Cost of sales	92,076	
Gross profit	35,898	
Operating expenses:		
Research and development	48,712	
Selling and marketing	50,187	
General and administrative	51,238	
Total operating expenses	150,137	
Loss from operations	(114,239)	
Interest expense	(9,091)	
Equity loss of equity method investee	(2,327)	
Interest and other income, net	1,801	
Loss before taxes	(123,856)	
Income tax expense	5,250	
Net loss	$ (129,106)	$

	Year Ended December 31,	
	2018	2019
Percentage of Revenue Data:		
Revenue	100%	%
Cost of sales	72	
Gross profit	28	
Operating expenses:		
Research and development	38	
Selling and marketing	39	
General and administrative	40	
Total operating expenses	117	
Loss from operations	(89)	
Interest expense	(7)	
Equity loss of equity method investee	(2)	
Interest and other income, net	1	
Loss before taxes	(97)	
Income tax expense	4	
Net loss	(101)%	%

Revenue

Revenue was $128.0 million for the year ended December 31, 2018. Revenue was reduced during the year ended December 31, 2018 by $53.1 million to reflect settlement discussions with payors and expected future refunds.

Cost of Sales

Cost of sales was $92.1 million for the year ended December 31, 2018. Cost of sales consists primarily of cost of labor and laboratory operation expenses and is driven by the volume of accessioned tests and changes in the mix of tests accessioned. Accessioned test volume is directly related to consumption of reagents and other laboratory support services; therefore, growth in accessioned volume of tests results in increased cost of sales. As a percentage of revenue, cost of sales was 71.9% for the year ended December 31, 2018.

Research and Development Expenses

Research and development expenses were $48.7 million for the year ended December 31, 2018. Research and development expenses were primarily comprised of $24.0 million in consulting costs, $14.3 million in salaries and personnel-related costs, $7.2 million in supplies costs, and $3.2 million in other expenses. The $24.0 million in consulting costs were primarily attributable to $18.3 million in research and development consulting for precision medicine, $1.5 million in legal consulting, $1.3 million in IT consulting, and $2.9 million in other research and development related consulting costs.

The following table summarizes the components of research and development expense for the years ended December 31, 2018 and 2019:

	Year Ended December 31,	
	2018	2019
	(in thousands)	
Molecular Testing	$ 23,340	$
Precision Medicine	25,372	
Total research and development expenses	$ 48,712	$

Selling and Marketing Expenses

Selling and marketing expenses were $50.2 million for the year ended December 31, 2018. Selling and marketing expenses primarily consisted of $36.2 million in salaries and personnel costs, primarily for the sales function. Selling and marketing expenses also included $8.8 million in travel and entertainment costs for sales, trade shows, and conferences, $2.3 million in consulting fees, largely related to marketing consulting, $1.4 million in advertising and promotions costs, and $1.5 million in other marketing costs.

General and Administrative Expenses

General and administrative expenses were $51.2 million for the year ended December 31, 2018. General and administrative expenses primarily consisted of $18.3 million in salaries and personnel costs. Additionally, general and administrative expenses included $8.8 million in consulting costs, $7.4 million in IT operations, $4.9 million in billing reimbursement and credentialing services, $0.4 million in costs related to the preparation for the opening of a new genetics laboratory, $4.7 million in facilities costs, and $6.7 million in other general and administrative costs.

Interest Expense

Interest expense for the year ended December 31, 2018 was $9.1 million, primarily consisting of $8.7 million in interest on borrowings under our Credit Agreement with a private equity firm. Interest expense is also attributable to our outstanding mortgages and capital lease agreements.

Equity Loss of Equity Method Investee

Equity loss of equity method investee was $2.3 million for the year ended December 31, 2018. The equity loss of equity method investee was primarily the result of $1.4 million impairment of our investment in NeoSeq in the fourth quarter of 2018, in addition to $0.9 million in equity loss of the equity method investment for the year ended December 31, 2018.

Interest and Other Income, Net

Interest and other income, net was $1.8 million for the year ended December 31, 2018, consisting of interest income earned from our cash and cash equivalents, and changes in fair value of short-term investments.

Income Tax Expense

Income tax expense was $5.3 million for the year ended December 31, 2018. During the year ended December 31, 2018, due to losses generated in 2018 and projected future taxable losses anticipated in the future, we established a 100% valuation allowance on net deferred tax assets and as a result recorded income tax expense. Due to the valuation allowance on net deferred tax assets, no tax benefit was recorded for our net loss for the year ended December 31, 2018.

Liquidity and Capital Resources

For the year ended December 31, 2018 and the nine months ended September 30, 2019, our net losses were $129.1 million and $97.6 million, respectively. Since our inception, our primary sources of liquidity have been generated by our operations, sales of preferred stock and common stock, and cash from debt financings. As of December 31, 2018, we had cash, cash equivalents and short-term investments of $69.2 million and an accumulated deficit of $142.5 million. During the year ended December 31, 2018, we had a net loss of $129.1 million and cash used in operations of $65.1 million. As of December 31, 2018, we had a $75.0 million term loan outstanding and mortgages outstanding of $3.6 million.

As of September 30, 2019, we had $26.1 million of cash and cash equivalents and a $75.0 million term loan outstanding with a private equity firm and mortgages outstanding of $3.4 million. Our accumulated deficit at September 30, 2019 was $261.6 million. During the nine months ended September 30, 2019, we had a net loss of $97.6 million and cash used in operations of $60.3 million. As of September 30, 2019, we had an aggregate of $71.9 million in debt outstanding, including the note payable and mortgages payable. Our primary requirements for liquidity have been to fund our working capital needs, capital expenditures, dividends, research and development, and general corporate needs, as well as to invest in or acquire companies or technologies that are synergistic with or complimentary to our business.

Based on our planned operations, we do not expect that our current cash, cash equivalents, and short-term investments will be sufficient to fund our operations for at least 12 months after the date that the condensed consolidated financial statements for the nine months ended September 31, 2019 are issued. We intend to raise additional capital through equity offerings and/or debt financings. Adequate funding, if needed, may not be available to us on acceptable terms, or at all. If we are unable to raise capital when needed or on attractive terms, we would be forced to delay, reduce or eliminate our research and development programs or other operations. If any of these events occur, our ability to achieve our operational goals would be adversely affected. Our future capital requirements and the adequacy of available funds will depend on many factors, including those described in “Risk Factors.” Depending on the severity and direct impact of these factors on us, we may be unable to secure additional financing to meet our operating requirements on terms favorable to us, or at all.

Credit and Security Agreements and Series B Preferred Stock

On June 12, 2013, we entered into a credit and security agreement with two funds managed by Athyrium Capital Management, LP, or Athyrium. This credit and security agreement provided for initial term loans aggregating to $15.0 million and an additional $5.0 million being available upon certain conditions being met, as defined in the credit and security agreement. During the year ended December 31, 2016, we drew on the additional $5.0 million term loan. As of December 31, 2016, the initial term loan of $15.0 million and the additional term loan of $5.0 million were outstanding under the credit and security agreement. These loans were paid in full on October 27, 2017 and the unamortized debt issuance costs of $39,278 were expensed.

On October 27, 2017, we entered into a new credit and security agreement, or the Credit Agreement, with a fund managed by Athyrium, as collateral agent and a lender. The Credit Agreement provided for a term loan of

$75.0 million. The Credit Agreement contains customary covenants, including a requirement to maintain a minimum unrestricted cash balance at all times of at least $5.0 million. The term loan is secured by all our tangible and intangible property assets, with the exception of intellectual property. The term loan accrues interest at a rate per annum equal to 9.5% and is due October 27, 2022.

We also entered into a Series B Preferred Stock purchase agreement, or the 2017 Series B Stock Purchase Agreement, with the same fund managed by Athyrium, which provided for the sale of 14,164,306 shares of Series B Preferred Stock at a purchase price of $3.53 per share for an aggregate purchase price of $50.0 million. The purchase price was paid in the form of (i) cash in an amount equal to $37.5 million and (ii) the delivery of 3,489,885 shares of our Series A-2 Preferred Stock, which shares of Series A-2 Preferred Stock had been purchased from Dr. Stylli, our Chairman and Chief Executive Officer, for $12.5 million. Concurrent with such transactions, Dr. Stylli converted the remaining 624,605 shares of Series A-2 Preferred Stock that he held into 633,766 shares of our common stock and we retired all shares of Series A-2 Preferred Stock. In connection with the 2017 Series B Stock Purchase Agreement, the fund managed by Athyrium received a warrant to purchase an additional 1,416,431 shares of Series B Preferred Stock.

The total proceeds of $124.2 million were allocated to the term loan, the Series B Preferred Stock, and Series B Preferred Stock Purchase Warrant based on the relative fair values of the term loan, equity, and warrant issued. As a result, we allocated proceeds of $65.7 million to the term loan. As the proceeds allocated to the term loan are lower than the stated loan amount of $75.0 million, the resulting $9.3 million discount will be amortized to interest expense using the effective interest method over the term of the loan.

During 2018 we recognized interest expense on the term loan of $8.7 million. In the nine months ended September 30, 2018 and 2019, we recognized interest expense on the term loan of $6.5 million and $6.6 million, respectively.

On August 27, 2019, we entered into a Series B Preferred Stock purchase agreement with Athyrium Opportunities III Acquisition LP, a fund managed by Athyrium, pursuant to which we issued 9,090,910 shares of Series B Preferred Stock at $2.75 per share for an aggregate purchase price of $25.0 million. A 1.283636364-for-1 stock split for our Series B Preferred Stock shares and Series B Preferred Stock Purchase Warrant issued and outstanding previously was effected on August 27, 2019 pursuant to an amendment and restatement of our amended and restated certificate of incorporation. As a result of the stock split, we issued an additional 4,017,512 shares of Series B Preferred Stock and adjusted the Series B Preferred Stock Purchase Warrant to be a warrant to purchase 1,818,182 shares of Series B Preferred Stock.

On August 27, 2019, we executed an exchange agreement with our Series A-1 Preferred Stock holders, pursuant to which 1,500,000 outstanding shares of Series A-1 Preferred Stock were exchanged for 35,664,241 shares of Series B Preferred Stock.

On November 12, 2019, we entered into a Series B Stock Purchase Agreement with Athyrium Opportunities III Acquisition 2 LP, a fund managed by Athyrium, pursuant to which we issued an additional 11,111,111 shares of Series B Preferred Stock at $2.25 per share for an aggregate purchase price of $25.0 million. A 1.22222222-for-1 stock split for our Series B Preferred Stock shares and Series B Preferred Stock Purchase Warrant issued and outstanding previously was effected on November 12, 2019 pursuant to an amendment and restatement of our amended and restated certificate of incorporation. The conversion price of the Series B Preferred Stock and exercise price of the outstanding Series B Preferred Stock Purchase Warrant were lowered from $2.75 to $2.25 per share. As a result of the stock split, we issued an additional 13,985,993 shares of Series B Preferred Stock and adjusted the Series B Preferred Stock Purchase Warrant to be a warrant to purchase 2,222,222 shares of Series B Preferred Stock.

On November 22, 2019, we completed an additional equity financing pursuant to the Series B Stock Purchase Agreement executed on November 12, 2019 with Beaver Creek Intermediate Fund, Ltd., an existing investor and

Dr. Stylli, our Chairman and Chief Executive Officer, for an aggregate purchase price of $6.1 million. We issued an aggregate of 2,722,222 shares of Series B Preferred Stock at a purchase price of $2.25 per share.

On December 19, 2019, we completed an additional equity financing pursuant to the Series B Stock Purchase Agreement executed on November 12, 2019 with Athyrium Opportunities III Acquisition 2 LP for an aggregate purchase price of $25.0 million. We issued on aggregate of 11,111,111 shares of Series B Preferred Stock at a purchase price of $2.25 per share.

Mortgages

On January 24, 2014, we executed a mortgage with Comerica Bank for $1.8 million for the purpose of acquiring land and building located in Ann Arbor, Michigan, which was previously leased by us and is used primarily for laboratory testing and research purposes. The outstanding balance was $1.5 million and $1.4 million as of December 31, 2018 and September 30, 2019, respectively. The mortgage matures in 2024 and requires monthly principal and interest payments at a fixed interest rate of 2.94% plus a floating rate at LIBOR.

We also have a mortgage with American Bank of Commerce (originally executed on February 19, 2008) outstanding on Avero Diagnostic's land and building located in Lubbock, Texas, which is used primarily for laboratory testing. The outstanding balance was $2.1 million and $1.9 million as of December 31, 2018 and September 30, 2019, respectively. The mortgage matures in 2029 and requires monthly principal and interest payments at an interest rate of 4.25%.

Cash Flows

Our primary uses of cash are to fund our operations and research and development as we continue to grow our business. We expect to continue to incur operating losses in future periods as our operating expenses increase to support the growth of our business. We expect that our research and development, selling and marketing, and general and administrative expenses will continue to increase as we expand our marketing efforts and increase our internal sales force to drive increased adoption of and reimbursement for our tests, continue our research and development efforts with respect to our current tests and further develop our product pipeline, including our preeclampsia test and precision medicine products under development. We expect that we will use a substantial portion of the net proceeds of this offering, in combination with our existing cash and cash equivalents, for these purposes and for the increased expenses associated with being a public company. Cash used to fund operating expenses is impacted by the timing of when we pay expenses, as reflected in the change in our outstanding accounts payable and accrued expenses.

The following table summarizes our cash flows for the periods indicated:

	Year Ended December 31,		Nine Months Ended September 30,	
	2018	2019	2018	2019
	(in thousands)			
			(unaudited)	
Cash used in operating activities	$ (65,126)	$	$ (33,684)	$ (60,279)
Cash provided by investing activities	55,831		17,617	17,333
Cash provided by (used in) financing activities	(12,807)		(12,646)	19,991

Cash Used in Operating Activities

Our largest source of operating cash is cash collections from third-party payors and customers. Our primary uses of cash from operating activities are for personnel related expenditures to support the growth of our business.

Net cash used in operating activities for the year ended December 31, 2018 of $65.1 million was primarily attributable to a $129.1 million net loss, adjusted for $17.8 million of non-cash charges, primarily driven by

$6.2 million of net deferred taxes, $6.1 million of depreciation and amortization, $2.3 million of stock-based compensation expense, $2.3 million of equity method investment loss, and a $0.9 million inventory write-down. The net cash inflow from changes in operating assets and liabilities of $46.2 million are primarily the result of a $42.6 million increase in accrued expenses and other current liabilities as a result of accruals for third-party payor settlement agreements, $5.8 million increase in accounts payable due to the timing of payments, $3.3 million increase in other long-term liabilities, and $0.6 million decrease in accounts receivable. These cash inflows were partially offset by a $3.5 million increase in inventory, $1.7 million increase in prepaid expenses and other current assets, and $0.9 million increase in income tax receivable.

Net cash used in operating activities in the nine months ended September 30, 2018 of $33.7 million was primarily attributable to a $59.8 million net loss, adjusted for $13.5 million of non-cash charges, primarily driven by $6.2 million of net deferred taxes, $4.5 million of depreciation and amortization, $1.8 million of stock-based compensation expense, $0.9 million of equity loss of equity method investee, and $0.1 million of loss on disposal. The net cash inflow from changes in operating assets and liabilities of $12.7 million are primarily the result of a $15.7 million increase in accounts payable and accrued expenses and other current liabilities due to the timing of the payment and a $0.4 million decrease in accounts receivable, offset by a $2.7 million increase in prepaid expenses and other current assets and $0.7 million increase in inventory.

Net cash used in operating activities in the nine months ended September 30, 2019 of $60.3 million was primarily attributable to a $97.6 million net loss, adjusted for $6.6 million of non-cash charges, primarily driven by $4.7 million of depreciation and amortization, $1.8 million of stock-based compensation expense, and a $0.1 million inventory excess adjustment. The net cash inflow from changes in operating assets and liabilities of $30.7 million are primarily the result of a $18.4 million increase in other long-term liabilities as a result of settlement payments due to third-party payors per settlement agreements, $10.7 million increase in accounts payable due to the timing of payments, $1.0 million increase in accrued expenses and other liabilities, $6.2 million decrease in income tax receivable, and $0.7 million decrease in accounts receivable. These cash inflows were partially offset by a $3.7 million increase in inventory and $2.6 million increase in prepaid expenses and other current assets.

Cash Provided by Investing Activities

Net cash provided by investing activities during the year ended December 31, 2018 of $55.8 million was primarily driven by $227.7 million from the sale of short-term investments. The cash inflow was partially offset by cash outflows of $167.0 million for purchases of short-term investments and $4.8 million for purchases of property and equipment.

Net cash provided by investing activities during the nine months ended September 30, 2018 of $17.6 million was primarily driven by $167.7 million from the sale of short-term investments. The cash inflow was partially offset by cash outflows of $146.8 million for purchases of short-term investments and $3.3 million for purchases of property and equipment.

Net cash provided by investing activities during the nine months ended September 30, 2019 of $17.3 million was primarily driven by $31.4 million from the sale of short-term investments. The cash inflow was partially offset by cash outflows of $11.2 million for purchases of short-term investments and $2.9 million for purchases of property and equipment.

Cash (Used in) Provided by Financing Activities

Net cash used in financing activities during the year ended December 31, 2018 of $12.8 million was primarily attributable to $11.3 million in repurchase of common stock, $1.5 million in principal payments on capital lease obligations, $0.3 million in payments for contingent consideration, and $0.2 million in principal payments on mortgages payable. The cash outflows were partially offset by $0.5 million proceeds from issuances of common stock.

Net cash used in financing activities during the nine months ended September 30, 2018 of $12.6 million was primarily attributable to $11.3 million in repurchase of common stock, $1.1 million in principal payments on capital lease obligations, $0.2 million in payments for contingent consideration, and $0.2 million in principal payments on mortgages payable. The cash outflows were partially offset by $0.2 million proceeds from issuances of common stock.

Net cash provided by financing activities during the nine months ended September 30, 2019 of $20.0 million was primarily attributable to $25.0 million in proceeds from the issuance of Series B Preferred Stock and $0.5 million in proceeds from issuance of common stock, partially offset by $4.5 million in dividends paid, $0.8 million in principal payments on capital lease obligations, and $0.2 million in principal payments on mortgages payable.

Contractual Obligations and Other Commitments

See “Liquidity and Capital Resources” for a description of our contractual obligations under our Credit Agreement.

The following table summarizes our contractual obligations as of December 31, 2018:

	Payments Due by Period				
	Total	Less Than 1 Year	1 to 3 Years	3 to 5 Years	More Than 5 Years
	(in thousands)				
Long-Term Debt Obligations(1)	$ 106,867	$ 7,584	$ 15,193	$ 81,669	$ 2,421
Capital Lease Obligations(2)	2,021	1,086	935	—	—
Operating Lease Obligations(3)	13,672	6,575	6,407	690	—
Purchase Obligations(4)	1,000	1,000			
Other Long-Term Liabilities(5)	7,243	4,243	3,000		
Total	$ 130,803	$ 20,488	$ 25,535	$ 82,359	$ 2,421

(1) Represents amounts payable under our Credit Agreement and amounts payable under our mortgages payable with Comerica Bank and American Bank of Commerce.
(2) Represents amounts payable for capital leases, including interest and principal payments, primarily related to equipment leases.
(3) Represents amounts payable for various noncancelable operating lease agreements, primarily for office space, laboratory space, and vehicles.
(4) Represents minimum amounts payable for canceleable purchase agreement.
(5) Represents amounts payable to third-party payors pursuant to settlement agreements.

Off-Balance Sheet Arrangements

As of December 31, 2018, we did not have any relationships with unconsolidated organizations or financial partnerships, such as structured finance or special purpose entities, that would have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes.

Quantitative and Qualitative Disclosures about Market Risk

We are exposed to market risks in the ordinary course of our business.

Interest Rate Risk

Our exposure to risks related to interest rates is minimal. The interest rates for most of our indebtedness, including under our Credit Agreement and our equipment financing facility, are fixed rates. Our Ann Arbor mortgage with an initial principal amount of $1.8 million has a floating interest rate of 2.94% plus a floating rate at LIBOR. Such interest-bearing instruments carry a degree of risk; however, we have not been exposed to, nor do we anticipate being exposed to, material risks due to changes in interest rates. A hypothetical 10% change in interest rates during any of the periods presented would not have had a material impact on our financial statements.

Our cash and cash equivalents consist primarily of highly liquid investments in money market funds and cash on hand and have an original maturity date of 90 days or less. The fair value of our cash and cash equivalents would not be significantly affected by either an increase or decrease in interest rates due mainly to the short-term nature of these instruments.

Foreign Currency Risk

Our operations are currently conducted primarily in the United States. As we expand internationally, our results of operations and cash flows may become subject to fluctuations due to changes in foreign currency exchange rates. In periods when the U.S. dollar declines in value as compared to the foreign currencies in which we incur expenses, our foreign-currency based expenses will increase when translated into U.S. dollars. In addition, future fluctuations in the value of the U.S. dollar may affect the price at which we sell our tests outside the United States. To date, our foreign currency risk has been minimal and we have not historically hedged our foreign currency risk; however, we may consider doing so in the future.

Critical Accounting Policies and Significant Judgments and Estimates

Our management's discussion and analysis of our financial condition and results of operations is based on our financial statements, which have been prepared in conformity with GAAP. The preparation of financial statements in accordance with GAAP requires management to make estimates and assumptions about future events that affect the amounts of assets and liabilities reported, disclosures about contingent assets and liabilities, and reported amounts of revenue and expenses. These estimates and assumptions are based on management's best estimates and judgment. Management regularly evaluates its estimates and assumptions using historical experience and other factors; however, actual results could differ materially from these estimates and could have an adverse effect on our financial statements. While our significant accounting policies are more fully described in the notes to our financial statements elsewhere in this prospectus, we believe that the accounting policies discussed below are most critical to understanding and evaluating our historical and future performance.

Revenue Recognition

Revenue is primarily derived from providing molecular laboratory tests to customers. We invoice and collect from third-party payors, laboratory services intermediaries, and self-paying individuals. Third-party payors include commercial payors, such as health insurance companies, health maintenance organizations and government payors, such as Medicare and Medicaid in the United States. We bill for these tests rendered upon completion of the testing process and delivery of test results to the customer.

We adopted the new revenue recognition guidance, ASC Topic 606, *Revenue from Contracts with Customers*, or ASC 606, on January 1, 2019 using the modified retrospective transition method. The transition method was applied to all contracts that were not yet complete as of January 1, 2019. The cumulative impact of adoption was recorded as an adjustment of $23.7 million to increase the opening balance of accounts receivable and decrease accumulated deficit as of January 1, 2019. Results for reporting periods beginning after January 1, 2019 are presented under ASC 606, while prior period amounts have not been adjusted and continue to be reported in accordance with our historical accounting policy under ASC Topic 605, *Revenue Recognition*.

In accordance with ASC 606, we follow a five-step process to recognize revenue: (i) identify the contract with the customer; (ii) identify the performance obligations; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations; and (v) recognize revenue when the performance obligations are satisfied. We have evaluated our contracts with healthcare insurers, government payors, laboratory partners, and patients and identified a single performance obligation in those contracts, the delivery of a test result. We satisfy our performance obligation at a point in time upon the delivery of the test result, at which point control is transferred to the customer, and we can bill for the tests. The amount of revenue recognized reflects the amount of consideration to which we expect to be entitled, or the transaction price, and considers the effects of variable consideration, which is discussed below.

Prior to 2019, we recognized the majority of our revenue from contracts involving third-party payors upon receipt of cash due to limited historical experience and uncertainty in determining the amount of revenue and timing of collections. Effective January 1, 2019, in accordance with ASC 606, the total consideration we expect to collect from insurance carriers, clinics, and patients in exchange for the tests accessioned is recognized in the period in which our tests are performed and reported to customers.

The transaction price is an estimate and may be fixed or variable. Variable consideration includes reimbursement from healthcare insurers, government payors, and patients and is adjusted for estimates of disallowed cases, discounts, and refunds using the expected value approach. Tests billed to healthcare insurers and directly to patients can take up to six months to collect and we may be paid less than the full amount billed or not be paid at all. For insurance carriers and government payors, we utilize the expected value approach using a portfolio of relevant historical data for payors with similar reimbursement experience. The portfolio estimate is developed using historical reimbursement data from payors and patients, as well as known current reimbursement trends not reflected in the historical data. Such variable consideration is included in the transaction price only to the extent it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainties with respect to the amount are resolved. We monitor these estimates at each reporting period based on actual cash collections in order to assess whether a revision to the estimate is required. Both the initial estimate and any subsequent revision to the estimate contain uncertainty and require the use of judgment in the estimation of the transaction price and application of the constraint for variable consideration. If actual results in the future vary from our estimates, we will adjust these estimates, which would affect revenue and earnings in the period such variances become known. The consideration expected from laboratory partners is generally a fixed amount.

Stock-Based Compensation

We calculate the fair value of stock options using the Black-Scholes option pricing valuation model, which incorporates various assumptions including assumptions including the fair value of our common stock, volatility, expected life, and risk-free interest rate. Compensation related to service-based awards are recognized starting on the grant date on a straight-line basis over the vesting period, which is generally four years.

Determining the grant date fair value of options using the Black-Scholes option pricing model requires management to make assumptions and judgments. If any of the assumptions used in the Black-Scholes model change significantly, stock-based compensation for future awards may differ materially compared with the awards granted previously. The assumptions and estimates are as follows:

- *Fair value of common stock* – The fair value of each stock option grant was determined using the methods and assumptions discussed below (see "—Common Stock Valuation"). Each of these inputs is subjective and generally requires significant judgment and estimation by management.
- *Expected term* – The expected term represents the period that stock-based awards are expected to be outstanding. Our historical share option exercise information is limited due to a lack of sufficient data points and does not provide a reasonable basis upon which to estimate an expected term. The expected term for option grants is therefore determined using the simplified method. The simplified method deems the expected term to be the midpoint between the vesting date and the contractual life of the stock-based awards.
- *Expected volatility* – The expected volatility was derived from the historical stock volatilities of comparable peer public companies within our industry that are considered to be comparable to our business over a period equivalent to the expected term of the stock-based awards, since there has been no trading history of our common stock.
- *Risk free interest rate* – The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the date of grant for zero-coupon U.S. Treasury notes with maturities approximately equal to the stock-based awards' expected term.

- *Expected dividend yield* – The expected dividend yield is zero as we have no plans to make dividend payments.

The following assumptions were used for the Black-Scholes option valuation model:

	Nine Months Ended September 30,	
	2018	2019
Risk-free interest rate	2.3%-2.9%	1.4%-2.4%
Expected volatility	53.0%	57.0%-62.0%
Expected dividend yield	—	—
Expected term (in years)	6 Years	6.25 Years

Based on the assumed initial public offering price per share of $, which is the midpoint of the offering price range set forth on the cover of this prospectus, the aggregate intrinsic value of our outstanding stock options as of September 30, 2019 was $, with $ related to vested stock options.

Common Stock Valuation

The estimated fair value of the common stock underlying our stock options was determined by our board of directors, with input from management, considering our most recently available third-party valuations of common stock and our board of directors' assessment of additional objective and subjective factors that it believed were relevant, and factors that may have changed from the date of the most recent valuation through the date of the grant. The valuations of our common stock were determined in accordance with the guidelines outlined in the American Institute of Certified Public Accountants Practice Aid, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation*. The assumptions we use in the valuation model are based on future expectations combined with management judgment. In the absence of a public trading market, our board of directors, with input from management, exercised significant judgment and considered numerous objective and subjective factors to determine the fair value of our common stock as of the date of each option grant, including the following factors:

- contemporaneous valuations performed by third-party valuation firms;
- the prices, rights, preferences, and privileges of our preferred stock relative to those of our common stock;
- the prices of preferred stock sold by us to third-party investors in arms-length transactions;
- the lack of marketability of our common stock;
- our actual operating and financial performance;
- current business conditions and projections;
- our history and the timing of the introduction of new products;
- our stage of development;
- the likelihood and timing of achieving a liquidity event, such as an initial public offering or a merger or acquisition of our business given prevailing market conditions;
- recent secondary stock transactions;
- the market performance of comparable publicly-traded companies; and
- U.S. market conditions.

For all approaches, the equity value was allocated among the various classes of our equity securities to derive a per share value of our common stock. We historically performed this allocation using the option pricing method,

or OPM, which treats the securities comprising our capital structure as call options with exercise prices based on the liquidation preferences of our various series of preferred stock and the exercise prices of our options and warrants.

As of December 31, 2018 and September 30, 2019, we performed this allocation using a probability-weighted expected return method, or PWERM. The PWERM involves the estimation of the value of our company under multiple future potential outcomes for us and estimates of the probability of each potential outcome. The per share value of our common stock determined using the PWERM is ultimately based upon probability-weighted per share values resulting from the various future scenarios, which primarily included an initial public offering or continued operation as a private company. Additionally, the PWERM was combined with the OPM to determine the value of the securities comprising our capital structure in certain of the scenarios considered in the PWERM.

After the equity value is determined and allocated to the various classes of shares, a discount for lack of marketability, or DLOM, is applied to arrive at the fair value of the common stock. A DLOM is meant to account for the lack of marketability of a stock that is not traded on public exchanges. For financial reporting purposes, we considered the amount of time between the valuation date and the grant date of our stock options to determine whether to use the latest common stock valuation or a straight-line interpolation between the two valuation dates. This determination included an evaluation of whether the subsequent valuation indicated that any significant change in valuation had occurred between the previous valuation and the grant date.

Following this offering, we will rely on the closing price of our common stock as reported on the date of grant to determine the fair value of our common stock, as shares of our common stock will be traded in the public market.

Goodwill and Intangible Assets

Goodwill is an asset representing the future economic benefits arising from other assets acquired in a business combination that are not individually identified and separately recognized. Goodwill is not amortized but instead is tested annually for impairment at the reporting unit level, or more frequently when events or changes in circumstances indicate that fair value of the reporting unit has been reduced to less than its carrying value. We may choose to perform a qualitative assessment to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount as a basis for determining whether it is necessary to perform the two-step goodwill impairment test.

If, after assessing qualitative factors, we determine it is not more likely than not that the fair value of a reporting unit is less than its carrying amount, then performing the two-step impairment test is unnecessary. If deemed necessary, a two-step test is used to identify the potential impairment and to measure the amount of goodwill impairment, if any. The first step is to compare the fair value of the reporting unit with its carrying amount, including goodwill. If the fair value of the reporting unit exceeds its carrying amount, goodwill is considered not impaired; otherwise, there is an indication that goodwill may be impaired and the amount of the loss, if any, is measured by performing step two. Under step two, the impairment loss, if any, is measured by comparing the implied fair value of the reporting unit goodwill with the carrying amount of goodwill. No impairment existed at December 31, 2018 or September 30, 2019.

Intangible assets consist of identifiable intangible assets acquired through acquisitions. Identifiable intangible assets include payor relationships, trade names, and noncompete agreements. We amortize intangible assets using the straight-line method over their useful lives. We amortize noncompete covenants using the straight-line method over the terms of the related agreements. We review for impairment of intangible assets with estimable useful lives whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. No impairment existed at December 31, 2018 or September 30, 2019.

Recent Accounting Pronouncements

For more information on recently issued accounting pronouncements, see Note 2, “Summary of Significant Accounting Policies” to our consolidated financial statements.

JOBS Act Accounting Election

We are an emerging growth company, as defined in the JOBS Act. Under this act, emerging growth companies can delay adopting new or revised accounting standards issued subsequent to the enactment of the JOBS Act until such time as those standards apply to private companies. We have elected to use this extended transition period and, as a result, our financial statements may not be comparable to companies that comply with public company effective dates. We also intend to rely on other exemptions provided by the JOBS Act, including without limitation, not being required to comply with the auditor attestation requirements of Section 404(b) of the Sarbanes-Oxley Act of 2002, as amended.

BUSINESS

Overview

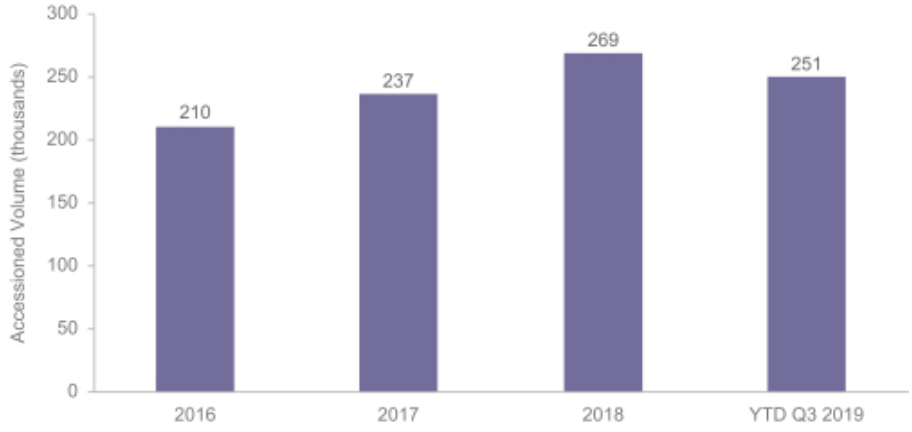
We are a biotechnology company with an established track record of success in developing and commercializing molecular testing products as well as innovating in the field of precision medicine. We believe that we are a market-leading provider of *in vitro* molecular tests designed to improve lives by providing actionable information that helps guide patients and physicians in making critical and timely medical decisions during various life stages, such as family planning, pregnancy, or navigating a complex disease diagnosis. Our vision is to transform healthcare to become more precise and personal by improving diagnoses of disease and improving patient outcomes through localized treatment with targeted therapies. We apply a multi-omics approach, combining genomics, epigenomics, proteomics, and metabolomics, to our molecular testing products and to the development of a suite of investigational ingestible devices and drug/device combinations designed to provide precise diagnostic sampling and drug delivery solutions.

Since 2010, our molecular testing business has achieved consistent year-over-year test volume growth through our robust product portfolio and our strong commercial organization. Our internal core competencies, deep research and development pipeline and strategic acquisitions of novel technologies have fueled our innovation in women's health, supporting the development and launch of complementary molecular testing products that inform critical healthcare decision-making across a woman's lifetime.

In 2015, we launched both our Innatal Prenatal Screen, a Non-Invasive Prenatal Testing, or NIPT, offering, and our Preparent Carrier Test, followed by the launch of our Riscover Hereditary Cancer Test in 2017. These molecular testing products collectively address a combined market of more than $2.5 billion in the United States alone. We offer molecular tests with market-leading performance and turnaround times, supported by end-to-end workflow solutions that increase administrative efficiencies. Along with our comprehensive menu of molecular tests, we offer patients pre-test education, clear and timely results, and on-demand genetic counseling. We are committed to providing patients and physicians with empathetic communication and support during critical moments to help empower and prepare patients and their families to make critical life decisions.

Since our inception, we have accessioned more than 1.3 million tests in the United States and the growth rate of our test volume is accelerating. The figure below shows our test volume growth from 2016 through the third quarter of 2019.

Test Volume Growth



Our commercial team of more than 150 individuals actively engages with physicians and their staff to emphasize the clinical need for our products, educate them on clinical value, and facilitate their ability to order our molecular tests. We place special emphasis on our customers' needs and journey with their patients. We ensure they are fully equipped with all the tools they need to discuss and educate their patients about the benefits of NIPT, carrier screening, and hereditary cancer screening, and also provide the added confidence that our genetic counselors are there to support them when needed.

We continue to innovate to drive the clinical and competitive differentiation of our molecular tests. For example, our next generation Innatal Prenatal Screen is designed to provide the same highly reliable results but with a faster turnaround time and at a much lower cost to us.

We are developing a rule-out test for preeclampsia. Annually, approximately one million pregnant women in the United States experience signs and symptoms that could be attributed to preeclampsia, which can cause serious, even fatal, complications for both mother and baby. Preeclampsia is the second most common cause of maternal death worldwide and is currently diagnosed by observing risk factors and common symptoms, such as high blood pressure, rather than diagnosing the actual condition itself. This approach often leads to false positive diagnoses and provides limited clinical utility, which can each lead to unnecessary hospitalizations and medical costs. We are developing a test that we believe has the potential to address these shortcomings by ruling out the condition itself (rather than merely detecting its symptoms) through testing for certain biomarkers. We believe that identifying non-preeclamptic pregnancies would improve patient outcomes while lowering the cost burden of preeclampsia to the U.S. healthcare system, estimated to be approximately $1.03 billion for mothers and $1.15 billion for infants annually. We believe the total addressable market for our preeclampsia test is approximately $3.0 billion per year in the United States alone.

We believe our future success will be driven by continued capture of market share by our molecular testing business and new revenue streams resulting from our diversified product development pipeline, both within and beyond women's health. Our core expertise in complex assay development, bioinformatics, and scalable commercial laboratory operations lends itself to a variety of potential applications. We are also developing a novel pipeline of precision medicine product candidates designed to provide solutions for gastrointestinal, or GI, disorders. This pipeline includes both diagnostic applications, targeted drug delivery in the GI tract at the site of disease, and the oral delivery of biologics. We believe these product candidates, if successfully developed, have the potential to address unmet healthcare needs by more precisely identifying and treating chronic GI diseases, such as small intestinal bacterial overgrowth, or SIBO, and inflammatory bowel disease, or IBD. We are also developing an epigenetics platform designed to assess the global, regional, and site-specific methylation information of the genome at low cost that is intended to be an alternative to onerous, costly whole-genome bisulfite sequencing and enable more rapid diagnostic product development.

We generated revenue of $ million and a net loss of $ million, for the year ended December 31, 2019, compared to revenue of $128.0 million and a net loss of $129.1 million, for the year ended December 31, 2018. In the years ended December 31, 2019 and 2018, respectively, we incurred $ million and $48.7 million in research and development investment costs.

Product and Product Candidate Overview

We support patients and physicians during patients' critical life decisions with our current suite of high-quality molecular tests:

Product	Description
innatal® PRENATAL SCREEN	A noninvasive prenatal test offered to women early in pregnancy to screen for risk of fetal chromosomal conditions, such as Down syndrome, trisomy 13, and trisomy 18, and sex chromosome disorders ***Commercialized in 2015***
preparent® CARRIER TEST	An expanded carrier screen that is performed on women or couples before conception or early in a pregnancy to identify if they carry certain mutations that cause genetic diseases ***Commercialized in 2015***
riscover® HEREDITARY CANCER	A hereditary cancer screen that looks for genetic mutations associated with elevated risk for certain hereditary cancers in an asymptomatic patient ***Commercialized in 2017***
resura® PRENATAL TEST FOR MONOGENIC DISEASE	A test for monogenic diseases that is the first commercially available, custom-designed solution for families at-risk for rare diseases ***Commercialized in 2019***
Preeclampsia Rule-Out Test	A test for symptomatic women suspected of developing preeclampsia during their pregnancy designed to rule out preeclampsia as the cause for the symptoms ***In Development***
Anatomic and Molecular Pathology Tests	A broad portfolio of anatomic and molecular pathology tests and specialized genetic tests we offer through Avero Diagnostics ***Acquired in 2015***

We are also developing a proprietary ingestible capsule platform designed to help diagnose and treat GI disorders at the site of disease, with the goal of addressing significant unmet needs and supporting affected patient populations by improving patient outcomes through precision medicine. Our investigational capsules are being developed for both diagnostic and therapeutic applications in disorders such as SIBO and IBD. Our precision medicine development pipeline includes:

Recoverable Sampling System (RSS)	An ingestible capsule designed to enable the collection, preservation, and analysis of samples from previously inaccessible parts of the small intestine ***First clinical trial expected in 2020***
Progenity Ingestible Laboratory Diagnostics (PIL Dx)	An ingestible capsule with an on-board laboratory designed to collect and analyze intestinal fluid samples in transit through the intestine, transmitting analysis data to a wearable device, with no ingestible device recovery needed and no sample to send to the laboratory ***Pilot clinical study expected in 2020***
Drug Delivery System (DDS)	Investigational drug/device combinations designed to deliver drug directly to the site of disease in the GI tract in an effort to improve efficacy while limiting toxicities caused by systemic exposure ***In pre-clinical proof-of-concept stage***
Oral Biotherapeutic Delivery System	A next generation, low-cost investigational drug/device combination designed to deliver biologics systemically, via a more convenient oral route of administration rather than the currently used intravenous or subcutaneous injections ***In pre-clinical proof-of-concept stage***

Our Strengths

We attribute our commercial success and future growth prospects to the following:

- ***A leading molecular testing business with clinical and competitive product advantages***. Our products are built on a foundation of molecular genetic expertise, excellence in bioinformatics, and dedication to women's health and reproductive medicine. We have built a robust product portfolio through efficient in-house development, clinical laboratory partnerships, and strategic acquisitions. Our tests have achieved market-leading reliability and performance benchmarks within their respective market categories.
- ***Integrated product offering***. We offer integrated molecular tests and end-to-end support services that enable physicians to seamlessly incorporate genetic testing into their office workflow and offer the convenience of ordering multiple tests from one source. Our workflow solutions customize the experience of working with us for a range of physician practice sizes and capabilities, lowering barriers to adoption of genetic testing. We also utilize a specialized team dedicated to integrating our systems with our healthcare providers' electronic medical record, or EMR, systems, opening bidirectional connectivity to streamline test ordering and reporting. We deliver easy-to-understand results and our customer support services provide convenient access to board-certified genetic counselors. We believe that these services collectively create substantial value and lead to customer loyalty.
- ***Breadth and depth of R&D capabilities driving breakthrough innovation***. We have built a first class research and development, or R&D, organization capable of harnessing and translating novel technologies into innovative platforms and product solutions as we strive to remain at the forefront of customer needs. Our technical expertise along the product development spectrum includes assay design, bioinformatics, and analytical and clinical validation and enables us to leverage existing knowledge to solve new challenges.

- ***Precision medicine platform targeting a large, underserved market***. We are developing an innovative and potentially scalable product platform that we believe will support the advancement of our precision medicine pipeline. This platform approach is based on an innovative capsule, which we believe could represent a paradigm shift from existing diagnostic and therapeutic approaches. We believe this platform has the potential to address significant unmet medical needs in the GI space, including the challenges in diagnosing, treating, and monitoring diseases without the repeated use of invasive procedures, such as upper GI endoscopies, colonoscopies, and biopsies.
- ***Comprehensive intellectual property portfolio***. We have retained worldwide rights to our internally-developed and acquired molecular testing and precision medicine technologies. We hold over 400 issued and pending patents that include claims that are directed to a range of molecular testing and precision medicine-related methods, systems, and compositions surrounding our suite of current and future products. In addition, we believe that our trade secrets and other know-how provide additional barriers to entry.
- ***Proven leadership with industry expertise***. Our senior management team and board of directors consist of veteran biotechnology and molecular testing professionals with deep industry experience. These individuals have extensive experience with numerous well-regarded biotechnology and diagnostic companies. Through their many years of experience, they have developed strong relationships with key thought leaders and medical societies.

Our Strategy

Our vision is to build upon our expertise and core competencies in molecular testing to transform healthcare to become more precise and personal in our existing markets as well as in new developmental fields such as ingestible diagnostics and targeted therapeutics. To realize our vision, we intend to:

- ***Expand market opportunity for our existing molecular tests***. We believe there is a significant opportunity to expand and further penetrate the markets for each of our existing molecular tests. We intend to accomplish this by working with industry groups and payors to increase payor policy coverage, educating patients, physicians, and payors on the clinical utility of our tests, and highlighting the cost efficiency and time savings provided by our tests and workflow solutions.
- ***Leverage our robust R&D capabilities to drive breakthrough innovation***. We seek to combine innovation with the technologies underlying our existing platforms to disrupt the current diagnostics and treatment paradigms. Through our robust research and development pipeline, we seek to unlock novel approaches that will drive improvement of patient outcomes in prenatal and perinatal medicine, gastroenterology, and oncology, increase the precision of medical research and diagnosis through ingestible sampling technologies, and create a new category of treatment options through proprietary drug/device combinations.
- ***Continue to expand and strengthen our direct sales force***. We believe that our specialized sales force is key to educating our customers about the clinical need for our molecular tests and our end-to-end workflow solutions. We are continuously optimizing market coverage of our highly qualified sales force and identifying new growth opportunities using a customized and targeted account profiling and messaging approach that better reflects our value proposition.
- ***Enhance our customer support services***. Our goal is to be a trusted and valued partner to our customers by delivering market-leading test performance and service to further integrate genetic testing into their workflow. We intend to expand upon our Progenity Partnerships program, our proprietary customer support services platform, to further streamline patient identification and selection for testing and enhance our customized physician and patient management initiatives. In addition, we intend to expand upon our patient management tools, which streamline and enhance the patient experience, including patient education, payor pre-authorization, easy-to-read test results, and access to genetic counselors.

- ***Develop and commercialize a disruptive precision medicine platform of GI diagnostics and therapeutics***. Our precision medicine platform is focused on addressing an unmet medical need of patients with GI disorders or related diseases. Leveraging an autonomous localization technology, we are developing a noninvasive, ingestible capsule platform, with investigational devices and drug/device combinations designed for both diagnostic and therapeutic purposes. We believe our product candidates, if successfully developed and approved or cleared, could become the first precision medicine products to diagnose and treat at the site of the disease within the GI tract. Ultimately, we intend to pursue commercialization of such product candidates ourselves or via strategic partnership upon their approval or clearance.

Our Molecular Tests

Our molecular tests provide accurate, reliable, and fast test results while simplifying ordering, pre-test education, processing, testing, reporting, counseling, and billing for physicians and patients. We currently offer tests with clinical utility that enable physicians to deliver clinical decision support for, and address the medical needs of, patients and their families. We complement these tests with our proprietary suite of end-to-end workflow solutions, enabling us to educate physicians, patients, and payors on the benefits and clinical utility of genetic testing. In addition, we offer physicians the convenience of ordering multiple tests from one source, integrate our services seamlessly into their practices, and deliver easy-to-understand results and genetic counseling support.

Our Current Test Portfolio

Innatal Prenatal Aneuploidy Screen

Our Innatal Prenatal Screen, launched in 2015, is a noninvasive prenatal screening test offered to women early in pregnancy to screen for chromosome abnormalities, known as aneuploidy, such as Down syndrome, trisomy 18, and trisomy 13, and sex chromosome disorders through the analysis of cell-free DNA, or cfDNA. The test is performed using whole-genome sequencing technology and provides a high level of accuracy at or after 10 weeks of gestation.

Our Innatal Prenatal Screen provides a positive predictive value customized to the patient's maternal age and the fetus' gestational age in order to accurately quantify the probability that a patient with a positive screening result truly has an affected fetus. Performance of the assay is highly accurate and reliable in the commercial laboratory. As shown in Table 1 below, we recently performed a complete validation study using maternal samples with known fetal outcomes to evaluate the performance of the assay.

Table 1: Innatal Prenatal Screen Performance(1)

Disorder	Sensitivity	Specificity
Down Syndrome	99.2%	>99.9%
Trisomy 18	>99.9%	99.7%
Trisomy 13	>99.9%	>99.9%
Monosomy X	>99.9%	99.8%
XX	99.0%	99.9%
XY	99.9%	99.0%
XXX, XXY, XYY	Limited data for these less common aneuploidies preclude performance calculations	

(1) Progenity Inc. validation data on file. Clinical correlation is indicated. If definitive diagnosis is desired, chorionic villus sampling or amniocentesis is necessary.

We believe this observed level of high performance sets our Innatal Prenatal Screen apart from competing NIPT. We believe our distinguished performance is a result of our in-depth knowledge and expertise with cfDNA,

allowing us to deliver a high-performing and market-leading NIPT. By selectively designing a single capture system assay that is able to query thousands of unique but related sites across the genome, we are able to reduce assay noise and boost performance. Our capture system is able to retain the ability to scan widely across the genome to retain specificity while enhancing information in key features to ensure high sensitivity, even with samples with low levels of fetal DNA.

In our validation study, our test has shown a low (approximately 1%) failure rate. Independent studies of competitive technologies have shown failure rates as much as four times higher. Failures require the drawing of another blood sample from the mother or more invasive molecular testing options. The reliability of NIPT may result in lower rates of invasive molecular testing options such as chorionic villus sampling and amniocentesis, which can cause procedure-related pregnancy losses and impose additional costs.

Market Opportunity

Numerous medical society guidelines have recognized that all pregnant women, regardless of age, should be offered screening, such as NIPT, for aneuploidy to better identify patients for whom more invasive procedures, such as amniocentesis, are recommended. We believe that guidelines will continue to develop in support of broader prenatal screening, and that provider and payor education will drive increased adoption of NIPT. We estimate that the total addressable market for NIPT is approximately $1.5 billion annually in the United States. We estimate that approximately 2 million NIPT were performed in the United States in 2018, of which an estimated 35% were on high-risk patients (those with characteristics that increase their risk of an aneuploidy pregnancy, such as advanced age of >35 years, abnormal ultrasound, family history, or positive maternal serum screen result), and 65% were on average-risk (general population) patients. We also believe that efforts at expanding payor medical coverage policy to include all patients, regardless of *a priori* risk, would help further expand the covered market to include a larger portion of the approximately four million pregnancies that occur annually in the United States.

Preparent Carrier Test

Our Preparent Carrier Test, launched in 2015, screens for carrier status of hereditary diseases prior to or early in pregnancy. Carrier screening identifies couples at-risk of having a baby with a genetic disease and allows for informed medical management decisions. Our test offers a broad menu of genetic carrier screening tests with high detection rates for a variety of genetic diseases, including cystic fibrosis, spinal muscular atrophy, and fragile X syndrome. We designed the Preparent Carrier Test to assess a couple's risk of passing down any of 200+ serious heritable diseases. This test is designed to meet the guidelines of the American College of Obstetricians and Gynecologists, or ACOG, and the American College of Medical Genetics, or ACMG, using a combination of methods (DNA sequencing, HEXA enzyme analysis, and hemoglobin evaluation) to maximize sensitivity.

In 2017, we expanded the Preparent product portfolio with the launch of the Preparent Exon test in partnership with Baylor Genetics. The Preparent Exon test uses exon sequencing to provide the higher sensitivity desired for reproductive medicine applications. Exon sequencing evaluates all of the coding regions of each gene and can identify both known and novel changes within the genetic code. The Preparent Exon test combines full exon sequencing and select copy number variant, or CNV, analysis. CNV analysis identifies large extra or missing pieces of select genes in which this type of variation, otherwise missed by exon sequencing alone, is a common cause of disease. This test design includes analysis of up to 280+ genes for a more complete evaluation of carrier status, resulting in, on average, ³95% clinical sensitivity in the general population. Our product portfolio includes four pre-curated panels of 3, 25, 150+, and 280+ genes, designed to fit the needs of different customer segments.

Market Opportunity

ACOG recently changed its recommendations to add expanded carrier screening, or ECS, which would potentially include most of our Preparent Carrier Test panels, as an acceptable screening strategy. We estimate

that the total U.S. addressable market for ECS is approximately $1.0 billion annually. We estimate that approximately 500,000 expanded carrier screens were performed in the United States in 2018. We believe significant opportunity exists to perform carrier screening in a greater proportion of the approximately four million pregnancies that occur annually in the United States, and to increase the penetration of ECS. We also believe that educating physicians and patients on the benefits of ECS, along with pursuing favorable medical policy coverage by payors, has the potential to convert traditional screening and non-screening patients to utilization of ECS.

Riscover Hereditary Cancer Test

Our Riscover Hereditary Cancer Test, launched in 2017 in partnership with Prevention Genetics, is a hereditary cancer screen that analyzes 31 genes associated with inherited risk of 12 types of cancer, including the BRCA1/2 genes for hereditary breast, ovarian, colorectal, endometrial, pancreatic, and other cancer syndromes, and the five genes associated with Lynch syndrome. Our panel was created to include the genes supported by guidelines from the National Comprehensive Cancer Network, or NCCN, and our sample workflow helps identify patients, typically those with a personal or family history of cancer, that are appropriate for testing, by following these guidelines. Our variant reporting process meets the standards of the ACMG and includes confirmation of all pathogenic variants, likely pathogenic variants, and variants of uncertain significance by a second, confirmatory method.

Patients receiving a positive Riscover test result can then consult with their physician to consider intensive screening options, lifestyle changes, drug regimens, or surgical interventions to reduce their lifetime risk of developing one of these heritable cancers. In addition, the test can also be used by asymptomatic individuals to assess familial cancer risk.

Market Opportunity

At present, we estimate there are over 82 million adults in the United States who are eligible for hereditary cancer screening in accordance with medical guidelines but that fewer than 5% of those adults have been screened. In addition, studies indicate that approximately 24% of women in OB/GYN practices meet NCCN guidelines for hereditary cancer screening, but that less than 15% of such eligible women are tested annually. We believe low penetration of this important market can be attributed to the challenges facing physicians in identifying eligible patients. For example, in a study of genetic testing for hereditary cancer published in the Journal of Clinical Oncology in 2017, the author estimated that more than 90% of unaffected, or asymptomatic, breast cancer susceptibility gene mutation carriers have yet to be identified.

Resura Prenatal Test for Monogenic Disease

Our Resura Prenatal Test for Monogenic Disease, launched in 2019, is the first commercially available, custom-designed noninvasive prenatal test for families at risk for rare single gene disorders. The Resura test is available to families with known risk for monogenic disease, which is caused by a mutation within a single gene. Common examples of monogenic disease include cystic fibrosis, sickle cell anemia, and Tay-Sachs disease. For many of these diseases, knowing the diagnosis before birth informs critical treatment decisions upon the infant’s arrival. The Resura test can be performed on disease-causing variants of all inheritance types, including recessive, dominant, and X-linked genetic mutations. Currently, testing for these genetic variants in a fetus involves undergoing invasive prenatal testing, such as amniocentesis, or waiting for postnatal diagnosis. The Resura test uses fetal cfDNA extracted from a sample of the mother’s blood to test for genetic variants. The Resura test allows a patient to know with >99% accuracy whether their baby is affected, without the risks of invasive testing or waiting until after delivery. This knowledge relieves the patient of the unknown and empowers them with the information needed to prepare for their baby’s birth.

Additional Products: Products of Conception, Serum Screening, and Preimplantation Testing

Our test portfolio also includes chromosomal microarray for pregnancy loss, which evaluates the genetic cause of miscarriage, maternal serum screening for chromosomal disorders, and preimplantation genetic testing for use with artificial reproductive technologies.

Services Supporting our Molecular Tests

Genetic Counseling Services

Genetic test results require interpretation and collaboration to provide the best care for the patient. Our licensed, board-certified genetic counselors are available and accessible to discuss patient test results and consult with clinicians. This service provides the clinician with support to confidently order medically appropriate testing and comprehensively counsel patients both before and after testing. We believe access to our team of board-certified genetic counselors contributes to responsible, evidence-based testing by clinicians.

Electronic Medical Record Integration

Adoption of EMRs by healthcare practices was catalyzed by HITECH, and many of our clients have EMRs in place for management of their clinical workflows. Our connectivity services are designed to integrate with multiple EMR interfaces, providing either unidirectional results delivery or bidirectional ordering and results delivery. These capabilities support the implementation of consistent clinical protocols by making orders easy and complete, and by providing results in a centralized record.

Progenity Partnerships Program

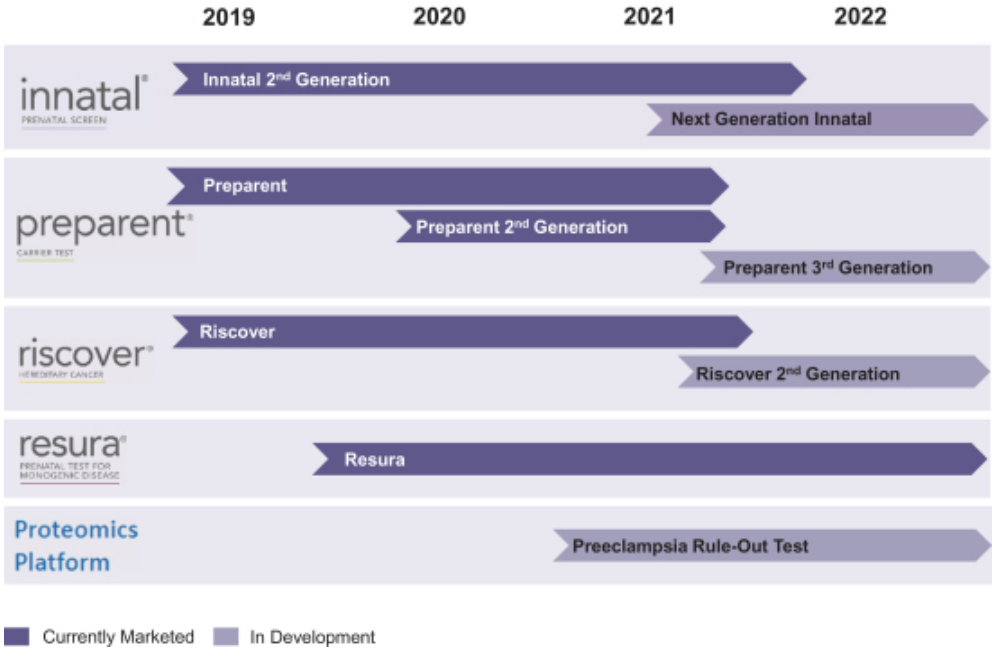
Our Progenity Partnerships program was launched in 2018 as a package of workflow solutions that are flexible and customizable for individual physician practices. The program outlines the menu of options available to support the journey of both patients and physicians with our tests and allows practices to select the options that best support their clinical workflow and patients. The program also supports regular business reviews through clinical and billing scorecards, driving client-specific discussions about test performance, billing outcomes, and emerging business needs, and is designed to ensure that our products are fully meeting the needs of each customer. We believe this support package facilitates client loyalty and cross-portfolio selling.

Our Research and Development Activities

Our molecular test portfolio and pipeline and our precision medicine product pipeline are each powered by a combination of symbiotic technology platforms exploiting advances in genetics, epigenetics, and proteomics, fortified by an innovative bioinformatics infrastructure. Our ecosystem is designed to enable rapid development and validation of products in an integrated fashion.

Molecular Tests

We have developed proprietary, low-cost, high-throughput platforms for our Innatal, Preparent, and Riscover molecular testing products. Our platforms exploit proprietary developments in a number of key molecular biology applications, bioinformatic algorithms, and innovative clinical reporting. Our assay platforms are designed to deliver increased performance at lower costs compared to alternative methods and have a flexible architecture, designed to allow for rapid product development iteration cycles with best in class performance. Our molecular tests and tests in development include:



Next Generation Innatal Prenatal Screen

We are developing a proprietary single molecule DNA counting assay utilizing advanced optics with custom chemistry and molecular biology that we believe will represent a substantial improvement to our existing Innatal platform, with simplified and more cost-effective assay workflow resulting in the same high clinical quality and reliability but with an up to 50% reduction in turnaround time and a substantial reduction in cost of goods sold for our NIPT. We have completed the feasibility assessment for this test and are in the process of completing the optimization process. If successfully developed, we currently anticipate a commercial launch of this product in the first half of 2021.

Preeclampsia Rule-Out Test

Preeclampsia is a hypertensive condition of pregnancy involving multiple pathways that usually occurs in the second half of pregnancy. The current standard of care for preeclampsia evaluations are often inconclusive and inaccurate. The only consensus treatment for preeclampsia is delivery of the baby, regardless of gestational age, which results in unnecessary hospital admissions, preterm births, and additional healthcare costs. Suspected preeclampsia before 37 weeks of gestation often results in preterm birth complications, thus a rule-out test with high negative predictive value for preeclampsia could provide the extra days and weeks of gestational development which are critical for positive infant health outcomes. While positive predictive testing is believed by some companies to be beneficial, the 2019 ACOG bulletin on gestational hypertension and preeclampsia stated that due to the relatively low positive predictive values (8% to 33%) of diagnostic tools, those tools cannot

predict preeclampsia and should remain investigational. Our preeclampsia rule-out test is not diagnostic, as it is designed to rule out (exclude) the disorder and rely on a high negative predictive value, or NPV, to provide physicians and other care givers with a novel adjunctive laboratory assessment to manage patients suspected of having preeclampsia. Superimposed preeclampsia is often indistinguishable from chronic and gestational hypertension, which are treated and managed differently; and therefore must be differentiated from true preeclampsia to avoid unnecessary preterm births.

To address this problem, we are developing a proprietary proteomics platform to support novel clinical tests focused on the quantitative measurement of multiple proteins. This multi-analyte platform is designed to detect complications and diseases manifesting from multiple complex biological pathways to provide insight into disease progression and to assist in clinical management. The platform is built on automated instrumentation, which is a Class I, 510(k) exempt device commonly found in clinical laboratories, which we believe will enable expansion of the platform into multiple clinical sites. We have developed reagents, including high affinity and specific antibodies, which we believe will deliver a differentiating platform focused on performance, sensitivity, and specificity.

Through this proteomics platform, we are developing a noninvasive, high sensitivity, multi-analyte blood-based test designed to assist in the clinical assessment and medical care decision-making process of physicians who care for pregnant women presenting with signs and symptoms of preeclampsia between 28 to 37 weeks of gestational age. We believe a risk assessment test that exhibits high NPV could provide a significant improvement in the ability to manage preeclampsia by ruling out the active condition, thereby obviating the cost and risk of further diagnosis and treatment in high-cost settings. We are also developing a noninvasive test designed to predict risk of preterm birth using a similar approach. If we are able to successfully develop and integrate this platform with our proven expertise in genomics and epigenetics, we believe we will be able to provide a multi-faceted assessment of a patient's well-being.

We believe our preeclampsia test, if successfully developed, will have the potential to impact the cadence and amount of patient visits and timing of indicated delivery, potentially saving the healthcare system money
while also improving patient care for both mother and baby. By designing the test to have high sensitivity and NPV rates, we expect the test, if and when offered, to be well suited to complement existing tools already part of the current standard of care, giving clinicians an additional strong, objective tool with which to better manage hypertensive disorders during pregnancy. We have secured the clinical validation set for this test and are in the process of completing the optimization process. If successfully developed, we anticipate a targeted commercial launch of this product in the second half of 2020.

Market Opportunity

According to the Preeclampsia Foundation, preeclampsia occurs in 5% to 8% of pregnancies in the United States and is one of the leading causes of premature birth and maternal and neonatal morbidity and mortality. Annually approximately one million pregnant women in the United States experience signs and symptoms that could be attributed to preeclampsia. An estimated 18% of maternal deaths in the United States are directly associated with preeclampsia or eclampsia. The rate of preeclampsia in the United States has increased by about 25% in the last two decades, consistent with increases in preeclampsia risk factors such as obesity, maternal age, and diabetes in the population. The only consensus treatment is early delivery of the infant, regardless of gestational age. According to a study published by the American Journal of Obstetrics and Gynecology, the annual cost burden of preeclampsia to the U.S. healthcare system is estimated to be approximately $1.03 billion for mothers and $1.15 billion for infants. We believe the total addressable market of our preeclampsia test is approximately $3.0 billion dollars per year in the United States alone.

Other Opportunities

We are also developing an epigenetics platform designed to assess the global, regional, and site-specific methylation information of the genome at low cost that is intended to be an alternative to onerous, costly whole-genome bisulfite sequencing and enable more rapid diagnostic product development.

Precision Medicine for GI-Related Disorders

We are developing innovative platforms that we believe will support the advancement of our precision medicine pipeline and address the significant unmet medical needs of patients with GI-related disorders. Our approach is founded on the development of innovative technologies that are designed to diagnose and treat at the site of the disease. Using this platform, we intend to develop diagnostic and therapeutic solutions for a broad range of disorders, but our initial focus is on SIBO and inflammatory disorders such as IBD. These disorders are difficult to treat due to the challenges in diagnosing these conditions and monitoring the treatment response without the repeated use of invasive procedures such as upper GI endoscopies, colonoscopies, and biopsies. From the therapeutic perspective, the most effective approved therapies for IBDs such as ulcerative colitis and Crohn's disease, are currently potent immunomodulatory drugs such as Humira and Xeljanz. Unlike the efficacy seen with other immunological disorders such as rheumatoid arthritis and psoriasis, we believe the efficacy of these potent agents for IBD is suboptimal. This can partly be explained by the inadequate bioavailability of the drug in the GI tract when administered by traditional oral capsules or by injection or infusion, even at high doses and because of the inability to increase dosage due to dose-limiting systemic toxicity. We believe a significant opportunity exists for a device that can diagnose GI-related disorders without an endoscopy or colonoscopy and a device that can deliver drugs in a targeted manner directly to the site of disease.

Our precision medicine product platform is based on our own multi-disciplinary research developed over the last five years and also in-licensed and acquired intellectual property from Medimetrics. Three of our four ingestible medical device product candidates utilize autonomous localization technology. This technology is designed to enable both diagnostic and therapeutic capsule types to autonomously determine their location within the GI tract. The autonomous localization technology is based on a proprietary LED light and photodetector sensor array that detects reflected light in the GI tract and uses a proprietary algorithm to determine anatomical locations of interest, for example, the pyloric and ileocecal transition. Of note, this technology differs from other GI tract localization technologies that rely on pH levels and other physiological factors which are not specific and are highly variable and also differs from delayed release drug delivery systems such as pH sensitive capsules and MMX technology. Our PIL Dx capsules are designed to work with a remote radio frequency, or RF, detector device that externally monitors all sensor measurements and can transmit results of GI tract testing. Our core technology is also designed to allow for precise sample collection of intestinal fluids at a predetermined location and analysis in the GI tract in both the PIL Dx capsule and the Recoverable Sampling System capsule (described below). Additionally, certain of the capsules we have under development have temperature sensors that are designed to measure the temperature of the surrounding environment and a microchip oscillator that is designed to keep time.

Recoverable Sampling System

We are developing the Recoverable Sampling System, or RSS, to analyze and characterize the GI tract. The RSS capsule is an investigational electromechanical capsule designed to autonomously collect and preserve intestinal fluids as it transits through the GI tract for *ex-vivo* analysis. The sample chamber of the RSS capsule contains an

absorbent sponge impregnated with preservative agents for a range of analytes including proteins, metabolites, and microbes. Once the capsule has been expelled, the subject would collect and ship the capsule to Progenity or another designated laboratory for sample extraction and analysis.

We believe the potential for this capsule is significant. For example, we believe it could help companies developing locally-active GI drugs to assess signals of early efficacy by measuring pharmacodynamic and associated downstream biomarkers at the site of action. The improved precision may allow for smaller clinical trial patient sizes. We believe the technology could potentially also be used for discovery of new therapeutic targets and diagnostic biomarkers. For practicing clinicians, we believe the RSS capsule, if successfully developed and cleared or approved, could be an invaluable tool to assess, in a noninvasive fashion, disease activity for inflammatory disorders like IBD and hepato-biliary disorders. In addition, recent third-party research has determined that the microbiome, which is the collective network of microorganisms that live in our GI tract, is essential for human development, immunity, and nutrition, and has led to the need for tools which can characterize the small bowel microbiome. We believe that the RSS capsule could offer researchers a simple noninvasive and yet powerful tool to characterize many diseases that have been associated with the small bowel microbiome. This could lead to advances in the understanding of many diseases which, until now, have been impractical or impossible to understand. If achieved, we expect this to lead to a new generation of more targeted therapies and diagnostics for many disorders.

In 2020, we expect to initiate the first clinical trial evaluating this technology. Assuming successful results, we would expect to seek CE marking for this device in Europe and that, if CE marking is obtained, initial applications for this device would be in internal programs, partnerships, research use and academic programs.

PIL Dx—Progenity Ingestible Laboratory Diagnostics

We are developing the PIL Dx diagnostic capsule to analyze samples from specific locations of the GI tract. Once ingested, the capsule is designed to communicate wirelessly with a wearable RF receiver to report on status and other operational data. Through our core proprietary autonomous localization technology, the capsule is designed to sample intestinal fluid at a predetermined location within the GI tract for real-time analysis. An on-board fluorometric assay system would then perform prespecified analyses, which could include measurement of inflammatory cytokines, drug levels, microbes, nucleic acids and other metabolites. The sensor measurements and other data would then be transmitted to a wearable RF receiver for collection and processing. The receiver would then be returned to the clinician for data download and review.

Our most advanced investigational PIL Dx capsule is the Smart Capsule Bacterial Detection System, or SCBDS. The SCBDS capsule includes an integrated assay which is designed to measure with high sensitivity the change of a metabolically active substrate that correlates with the amount of live bacteria in the small intestine. We believe this technology, if successfully developed and approved or cleared, has the potential to become the standard of care for diagnosing SIBO. Currently the SCBDS capsule has undergone a series of validation and verification tests of the various subsystems and evaluations of the localization algorithm. In these studies, the localization of the capsule was confirmed either by CT scan or scintigraphy. Beyond SIBO, we believe the PIL Dx capsule, if it can be designed to measure other analytes, will have broad potential applications, such as for early tumor detection and disease characterization and subtyping, and disease activity monitoring for conditions such as IBD.

Market Opportunity

SIBO is a clinical condition associated with abnormally high bacterial counts in the small intestine that are characterized by symptoms such as bloating, abdominal pain, and diarrhea. These symptoms can be very debilitating and are believed to be caused primarily by an over production of gas by the bacteria. A reduction in the bacteria through antibiotic therapy generally alleviates the symptoms, at least temporarily. SIBO is substantially under-diagnosed and limitations exist with currently available testing methods, and as a result, patients with SIBO are poorly served. The current standard of care to diagnose SIBO is a duodenal or jejunal

aspirate obtained via an invasive upper GI endoscopy which is then transported to a microbiology laboratory for culture, with results generally available several days later. There is high variability in the technique for the aspiration and culture from laboratory to laboratory, leading to inconsistent results between laboratories. This current standard of care is not only costly and time consuming, but it also requires sedation and is highly invasive, thus making our capsule technology a potentially attractive alternative. In addition, there are various breath tests which rely on the detection of hydrogen or methane as a proxy for bacterial presence in the small intestine. These breath tests suffer from lack of sensitivity and specificity which limit their effectiveness. In addition, there are several different conditions that have similar symptoms, further complicating its diagnosis. As a result, SIBO is under-diagnosed. We believe that our SCBDS capsule, if successfully developed and cleared or approved, may fulfill an unmet medical need by accurately identifying patients that have SIBO so that physicians can treat and monitor their patients more effectively. It is estimated that SIBO may be as prevalent as up to 6% of healthy populations, up to 50% of patients on chronic proton-pump inhibitor treatment, up to 67% of patients with celiac disease, up to 88% of patients with Crohn's disease, and up to 44% of patients with diabetes.

Targeted Therapeutics

We are developing a pipeline of investigational drug/device combinations that are designed to treat disease at its site in the GI tract and achieve high concentration in the affected tissues in an effort to drive efficacy and minimize systemic exposure and toxicity.

Drug Delivery System

Our targeted therapeutics pipeline leverages our targeted drug delivery system, or DDS, capsule in an effort to deliver drugs to the site of disease in the GI tract and incorporate drug formulations designed to improve stability and uptake in the GI tract. The DDS capsule is designed to identify the ileal/ileocecal region of the GI tract using our autonomous localization technology and deliver medication to that region. The DDS capsule is an investigational, single-use ingestible device with an outer casing made of inert material and rounded for ease of swallowing. It is designed to passively deliver a precise dose of drugs that can act locally in the GI tract, thereby potentially limiting systemic absorption and the associated toxicity side effects. Candidate drugs and biologics for this form of delivery are approved drugs and biologics that predominately act in the intestinal tissues, but that we believe have limited efficacy because of systemic toxicities. Examples of such drugs include adalimumab and tofacitinib.

There is research, including research conducted by us, that suggests this may be a viable therapeutic approach. For anti-TNFs such as infliximab and adalimumab, clinical studies have shown that in patients with active IBD, the tissue TNF level far exceeded the amount of drug reaching the actively inflamed tissue, and we believe that current approaches to drug delivery are therefore inadequate to suppress the inflammatory response. Moreover, preclinical studies have shown that monoclonal antibodies, or mAbs, such as adalimumab and vedolizumab were found in inflamed colonic tissue when given directly into the lumen of the colon. We have conducted preclinical studies which indicate that these mAbs, given locally, were as efficacious as drugs given via a systemic route of administration. We believe delivering mAbs and other drugs locally at the site of inflammation will result in a higher concentration of drug in the intestinal tissues of patients with IBD, potentially leading to greater efficacy. We believe that local delivery at the site of disease will result in less systemic exposure and may require lower drug administration, potentially reducing the severe adverse event profiles seen with some of these therapeutics. We also believe that because this technology is designed to have lower systemic absorption, it may be ideal for use in combination therapy in an effort to further boost efficacy without adversely affecting the active drug's safety profile.

Oral Biotherapeutic Delivery System

Over the past two decades, biologic drugs have become the standard of care for a variety of diseases including rheumatoid arthritis, psoriasis, diabetes, Crohn's disease, ulcerative colitis, and a range of cancers. Generally, these biologics are administered systemically via subcutaneous or intravenous injection. We are developing drug/

device combinations designed to deliver biologics systemically, via a more convenient oral route of administration. Our unique approach to oral delivery of biologic drugs is through use of an ingestible capsule designed to spray a liquid drug substance past the mucosal surface into the submucosal tissues of the small intestine where it can be absorbed systemically. This ingestible capsule technology is designed to protect the drug from acids and proteolytic enzymes of the gut until it reaches the site of delivery through means other than our autonomous localization technology where it may be triggered and spray the preloaded drug substance past the intestinal barrier. The device design is simple, low-cost, and has the appearance of a typical drug capsule. We believe this technology, if successfully developed, has broad applications beyond GI diseases and can be applied to numerous drugs that currently demand a parenteral route of administration.

Key Targeted Therapeutic Opportunities in Gastrointestinal Disease

Inflammatory Bowel Diseases

IBDs are a heterogeneous group of inflammatory disorders of the GI tract, and broadly include two major groups: Crohn's disease and ulcerative colitis. According to the Crohn's and Colitis Foundation, or CCF, there are approximately 1.6 million Americans affected by IBD. The disease typically has an onset before 30 years of age and is a lifelong illness that can be potentially life-threatening. The body's immune system which normally protects the body from external insults like bacteria and viruses becomes dysregulated in patients with IBD and this causes the immune system to attack the body's own tissues. Although IBD has no known cause, there is strong evidence that genetics, a dysregulated immune system, the environment and the gut microbiome all play a role initially in causing the disease, and then perpetuating the inflammation.

Ulcerative Colitis

Ulcerative colitis, or UC, is characterized by inflammation and ulceration of the mucosal lining of the colon. The typical symptoms include diarrhea, bleeding and often abdominal pain. In the more severe cases, there can be large amount of blood loss, which can be life-threatening and require emergency surgery. The goal of medical treatment for all forms of IBD is to reduce the inflammation and to induce remission initially with medication, followed by the administration of maintenance medication to prevent a relapse of the disease. Treatment for UC depends on the severity of the disease, complications, and response to previous treatment. Most patients with mild to moderate UC will first be treated with aminosalicylates. For patients with moderate to severe UC who do not respond to aminosalicylates, more potent systemic therapies such as infliximab and adalimumab are used. The CCF estimates that UC may affect as many as 907,000 Americans.

Crohn's Disease

Similar to UC, Crohn's disease, or CD, is a chronic disorder that causes inflammation of the digestive tract, but unlike UC, CD may involve all layers of the intestine and can affect any part of the intestines. The symptoms of CD range from mild to severe with the most common symptoms being diarrhea, abdominal pain, fever, and sometimes rectal bleeding. Mild symptoms may be treated with topical corticosteroids and aminosalicylates. For moderate to severe CD, the biologics described above are commonly used to treat UC. The CCF estimates as many as 780,000 Americans have CD, and states that it is most often diagnosed in adolescents and young adults between the ages of 20 and 30.

Other Diseases of Interest

While the abovementioned diseases are our initial focus, we believe our precision medicine platform may have broad application beyond SIBO and IBD and into other diseases where a dysbiosis of the small bowel microflora has been implicated, including irritable bowel syndrome, nonalcoholic fatty liver disease and nonalcoholic steatohepatitis, or NASH, cardiovascular diseases, and central nervous system disorders like Parkinson's disease, depression, and autism. It is well accepted that the current technology of characterizing the stool microbiome is not optimal to understand the host-microbe interaction, especially for evaluating the bacteria in the small intestine. Current technologies to assess the small intestinal microbial flora are highly invasive, imprecise, and/or

impractical for larger studies; therefore, we believe that a device that has the ability to collect and characterize the bacteria, and analyze their function would dramatically advance our knowledge and understanding of the complex host-microbe interaction. We believe that our product candidates, if successfully developed, may be able to achieve these outcomes.

Another area of precision medicine research and development interest for us is the early detection or recurrence of GI tumors such as liver cancer, pancreatic cancer, and colorectal cancer. We believe that DNA fragments from GI tumors will be detected in intestinal fluids at higher concentrations than in the blood and therefore our products may be more sensitive than screening through a blood sample or via commercially-available diagnostic tests that analyze stool samples.

Key Features of our Precision Medicine Platform

Our platform is distinguished by several key elements:

- ***Robust discovery and development talent.*** Our multi-disciplinary precision medicine team is comprised of over 25 full-time, experienced drug discoverers, researchers, and innovators working to create solutions to improve patient outcomes. In addition to our full-time staff, our team is augmented by more than 60 contract researchers, manufacturers, and consultants. We have also added key R&D employees as part of our acquisitions, including the former Chief Scientific Officer of Medimetrics.
- ***Disciplined approach to target identification and prioritization***. We intend to target diseases with large markets and where current treatments have limited efficacy and very high morbidity, such as IBD. In addition to prioritizing diseases with high unmet need, we will look for the potential to expand the portion of the population that can be treated as our targeted therapeutics may have lower systemic toxicity, lower immunogenicity, and increase market penetration.
- ***Opportunistic approach to drug candidate selection***. Using our precision medicine platform, we are developing potentially improved versions of existing drugs with established mechanisms of action. We intend to only pursue mature and approved drugs with expiring patents that we believe are biologically suited to address the target disease. We believe this strategy of starting with an approved therapeutic is core to operating our precision medicine drug development programs in a scalable and capital efficient manner.
- ***Operational efficiency***. By starting with approved drugs with known mechanisms of action, we believe we can efficiently and cost-effectively evaluate opportunities that we believe are the most promising, and very quickly discontinue programs that do not meet performance thresholds. We believe this will enable us to develop a sustainable and scalable platform to develop multiple drug/device candidates.
- ***Rational and optimized ownership for each program***. With each product candidate, we intend to strategically evaluate the most effective and efficient means for development. When we believe we are best suited to continue a program's development, we intend to continue to fund it internally to commercialization. However, if we believe a partner is better suited to progress a specific program, we may consider entering into strategic partnerships for our programs when we believe such partnerships are economically attractive.

Laboratories

Our corporate offices are located in San Diego, California. We own and operate a certified CLIA and CAP accredited laboratory located in Ann Arbor, Michigan specializing in the molecular testing market serving women's health providers in the obstetric, gynecological, fertility, and maternal fetal medicine specialty areas in the United States. Distribution is managed by a dedicated sales force and a field operations team who support all logistical functions in receiving clinical samples to the laboratory for analysis. Through our affiliation with

Mattison Pathology, LLP, a Texas limited liability partnership doing business as Avero Diagnostics, located in Lubbock and Dallas, Texas, our operations have expanded to provide anatomic and molecular pathology tests in the United States.

We have a GI-focused laboratory in Irving, Texas to support our precision medicine platform. We believe that the technologies under development will provide quantitative analysis for the RSS capsule and the PIL Dx capsule, as well as for precision medicine-related studies. The team members located at the laboratory are developing and validating reagents and assays to analyze protein, nucleic acid, metabolite, and bacterial analytes. The assays will be used for a range of nonclinical and clinical studies in conditions including SIBO and IBD, and in oncology.

Avero Diagnostics

Through Avero Diagnostics, our operations have expanded to provide anatomic and molecular pathology tests in the United States. Our specialized pathology tests provide expertise in the area of women's healthcare and full-service anatomic pathology. Our expertise in pathology covers a broad spectrum of subspecialties which include gynecologic pathology, breast pathology, urologic pathology, GI pathology, molecular pathology, and dermatopathology. We currently offer histopathology, cytopathology, molecular pathology, and fluorescence in-situ hybridization tests to a network of clients located throughout the United States through Avero Diagnostics. We currently also offer genetic tests for NIPT and carrier screening through Avero Diagnostics.

Laboratory Operations and Processes

Our laboratory utilizes islands of automation and an integrated laboratory information system, or LIS, to deliver high quality results, while maximizing efficiency and agility. Samples are received by the laboratory directly from individual practices or collected by courier services via commercial shippers. Once received, sample and patient demographic information are entered into the LIS. Patient information is entered directly from physician practices (EMR orders), partner laboratories via interface to an EMR, manually from standard requisition forms, or via scanning (using an optical character recognition platform). Samples are linked to patient records via barcoded labels and distributed to testing departments or a partner laboratory.

Our islands of automation strategy utilize automated liquid handling systems to perform high complexity and repetitive tasks in a structured and reproducible manner multiplying the productivity of each staff member. Each task is verified by highly trained staff before being passed to the next step. This strategy is designed to allow optimization of staff and equipment through daily volume fluctuations while also permitting continuous process improvement and updating for new product offerings without requiring redevelopment of a fully automated process.

In-house testing first proceeds to the hematology department, if applicable, and samples are loaded onto the testing platforms. Loaded samples are automatically scanned as they are fed into the testing instruments. Preparent and Innatal samples are then delivered to the DNA extraction group. Samples are scanned while being loaded on the extraction systems, and the sample ID, plate, and plate location are captured in our LIS system, linking sample information to plate and location. Isolated DNA is split so that one isolation can be used for multiple different next generation sequencing, or NGS, and non-NGS tests, thereby reducing the need for multiple extractions and reducing labor and materials costs.

After extraction, samples are processed in batches utilizing color coded and barcoded pre-aliquoted reagent plates. Our internally prepared reagent plates reduce technologist time and improve throughput and turnaround time. Use of the color coding system and barcoding allows traceability of all reagents without requiring laborious and error prone manual recording. Continuing with automation islands, steps requiring transfer of samples as well a multi-step process are performed by internally developed automation systems. This includes amplification set-up and sample addition. Each sample plate, reagent plate, liquid handling system, thermocycler, sequencer/detection system, and performing technologist is recorded.

After amplification, library preparation and indexing samples are pooled and quantitated to allow for optimal loading on the sequencing instruments. Due to the islands of automation strategy, multiple workflows coexist on common equipment maximizing utilization while ensuring the required turnaround time. In order to ensure maximum quality during the manual steps, the materials and set-up are verified by a second trained technologist.

Once patient data is processed through the laboratory, and sent through any applicable bioinformatics pipelines, it goes to the laboratory directors for analysis and resulting. Depending on the test, analysis is performed through either a proprietary, internally-built, web-based software platform, or a commercially available desktop-based software. Laboratory directors review run-level quality metrics and positive/negative/no-template control results to confirm that each patient test run meets pre-defined criteria for reporting. Results for each patient are then carefully reviewed and the laboratory director makes the decision to either report the results, rerun the patient sample, or report the test as failed analysis. These decisions are made based on standard operating procedures and laboratory director discretion.

When laboratory director-approved results are available for a given patient report, the report is automatically generated in Progenity Report Writer, a web-based software. Laboratory directors then review each patient report and approve or edit the report as needed. Most report content is pre-programmed and automatically added to each report. Only a subset of reports require manual edits before approval and release to the ordering provider. Progenity Report Writer is also the software that the laboratory directors use to approve and release all reports generated by third-party laboratories for tests not run in our laboratories.

Our board-certified laboratory directors also work closely with the laboratory's medical science liaisons, or MSLs, who are also all board-certified genetic counselors. The MSLs are the outward facing clinical group, and they take calls from ordering providers and patients. If a clinician calls in with information that could be relevant to the analysis and reporting of their patient's test, the MSLs pass this information on to the laboratory directors. Laboratory directors also work with the MSLs any time complex results are found that require additional information from the ordering provider. MSLs also assist laboratory directors with writing custom report language for complex cases to make sure it can be easily understood by the ordering provider.

Finally, laboratory directors are responsible for ensuring compliance with CLIA regulations, applicable state-specific regulations, and recommendations from professional societies such as CAP, ACMG, and Clinical and Laboratory Standards Institute. The laboratory directors fulfill this requirement by working with the operations department to confirm that all laboratory personnel have the proper credentials and training, procedural requirements are met, and the relevant quality metrics are monitored over time to identify any possible problems that could affect patient results.

Once complete, results are provided to clients through either an interface to an EMR, or by electronic facsimile. We staff an internal team of genetic counselors to provide additional resources to clinicians, and to speak to patients who need additional counseling. Our client service representatives serve as a final resource. These representatives support our sales team and clients in addressing challenges related to correctly populated requisitions or supplementary information necessary for clinical interpretation.

Laboratory Supplies

We are party to a supply and service agreement, as amended, or the Supply Agreement, with Illumina, pursuant to which Illumina provides us products and services that we use in our laboratory operations, including certain sequencing instruments and reagents, as well as services for the installation, maintenance, and repair of the sequencing instruments.

Pursuant to the Supply Agreement, we have agreed to exclusively use Illumina consumables and equipment for all NIPT laboratory tests that we perform during the term of the Supply Agreement, with the exception of certain reagents that are not available for purchase from Illumina. In addition, we have a minimum purchase requirement per calendar quarter for consumables. We also must maintain a service contract on each sequencing instrument that we use for our NIPT laboratory services.

During the term of the Supply Agreement, we are required to make a rolling, non-binding forecast of our expected needs for reagents and other consumables, and place purchase orders for reagents and other consumables. Illumina may not unreasonably reject conforming purchase orders. Subject to discounts that vary depending on the volume of hardware and reagents and other consumables ordered, the price for sequencing instruments and other services is based on Illumina list prices, and the price for reagents is based on contract prices that are fixed for a set period of time and may increase thereafter subject to limitations.

The initial term of the Supply Agreement continues until June 2022. We may terminate the Supply Agreement in our discretion at any time by giving 90 days' prior written notice to Illumina.

Sales and Marketing

We have a commercial team of more than 150 individuals in the United States. Our sales force, one component of our commercial team, promotes our products directly to OB/GYNs and mid-level healthcare providers in the women's health market and offers our full product portfolio in an effort to maximize cross-selling opportunities. We are expanding into adjacent specialty markets with sales and marketing teams targeting customers in maternal fetal medicine, genetic counseling, and reproductive medicine. Engagement with these customers not only generates testing volume, but also opens access to key opinion leaders, potential clinical research partners, and decision-makers in large combined practice groups. We expect that strong relationships with key players in these markets, as we expand our women's health portfolio, will allow us to carefully address the needs, motivations, and business goals of our customers.

Our marketing strategy is focused on driving adoption of genetic testing protocols and educating healthcare professionals on the value of genetic testing for healthcare management decisions. Our marketing activities include presenting clinical research at medical conferences and scientific meetings, conducting provider education campaigns and hosting medical education events through field medical science liaisons and sales representatives, using online advertising, social media, and public relations channels to raise product and company awareness, and developing strategic business partnerships.

Reimbursement

Laboratory tests are classified for reimbursement purposes under a coding system known as Current Procedure Terminology, or CPT, which we and our physician customers must use to bill payors and to receive payment for our molecular tests. These CPT codes are associated with the particular molecular test that we have provided to the patient. Once the AMA establishes a CPT code, CMS or its contractors may establish payment levels and coverage rules with respect to our molecular tests under Medicare and Medicaid. In addition, commercial third-party payors independently establish reimbursement rates and coverage rules for our molecular tests under their respective plans.

We currently submit for reimbursement using CPT codes that we believe are appropriate for our testing, but codes may be rejected or withdrawn and payors may seek refunds of amounts that they claim were inappropriately billed to a specified CPT code.

We generate revenue from the sales of our molecular tests and receive payments for such tests from four distinct channels: commercial third-party payors, government health benefits programs such as Medicare and Medicaid, laboratory distribution partners, and individual patients. Reimbursements from payors, including commercial third-party payors and government health benefits programs, constituted % of our revenue during the year ended December 31, 2019. We will be contracted with national third-party commercial payors effective as of January 1, 2020 representing an estimated approximately 100 million covered lives.

Commercial Third-Party Payors

We submit claims for reimbursement and receive associated payments from commercial third-party payors. Our contracts with commercial third-party payors provide for contracted rates of reimbursement. For instances where

we are not contracted with a particular commercial third-party payor, we submit claims seeking reimbursement on a non-contracted basis.

If we become an in-network provider in a commercial third-party payor health plan, we become subject to the terms of contracts entered into with such payors and we may be subject to discipline, breach of contract actions, non-renewal, or other contractual remedies for noncompliance with the requirements of these contracts (which may include reduced reimbursement rates) and we are also subject to associated state or federal laws.

We have entered into settlement agreements with commercial third-party payors in order to settle claims related to past billing and coding practices that have been discontinued, including, without limitation: Connecticut General Life Insurance Company and Cigna Health and Life Insurance Company, or Cigna, United HealthCare Services, Inc. and UnitedHealthcare Insurance Company, or United, and Aetna Health Management, Inc., or Aetna. In December 2018, we entered into a settlement agreement with Cigna pursuant to which we agreed to pay Cigna $12 million in a series of installments, and we agreed to certain covenants regarding our billing practices. We have paid $8.8 million under such agreement to date. In September 2019, we entered into a settlement agreement with United that governs past benefit claims and a corrective action plan which governs future benefit claims that we submit for reimbursement at an arm's length, out-of-network basis to United. The total settlement amount was $30 million, to be paid in a series of installments. We have paid $2.0 million under such agreement to date. In November 2019, we entered into a settlement agreement with Aetna pursuant to which we agreed to pay Aetna $15 million in a series of installments. We have paid $5.0 million under such agreement to date. As part of the Aetna settlement, we also entered into an in-network participation agreement with Aetna that will become effective January 1, 2020. Each of these settlement agreements provides for a release of past claims by all parties.

Government Health Benefits Programs

We are enrolled and eligible to receive payment from government health benefits programs, including Medicare and Medicaid. We are a participating provider under most state Medicaid plans.

In April 2014, Congress passed the Protecting Access to Medical Care Act of 2014, or PAMA, which included substantial changes to the way in which clinical laboratory services are paid under Medicare. Under PAMA, laboratories such as us that receive the majority of their Medicare revenue from payments made under the Clinical Laboratory Fee Schedule or the Physician Fee Schedule are required to report to CMS, beginning in 2017 and every three years thereafter (or annually for "advanced diagnostic laboratory tests"), commercial third-party payor reimbursement rates and the volume of tests that they have performed for such payors. Laboratories that fail to report the required information may be subject to substantial civil monetary penalties. If we determine that our tests meet the current definition of advanced diagnostic laboratory tests, we will be required to comply with these reporting requirements on an annual basis.

For clinical diagnostic laboratory tests furnished on or after January 1, 2017, Medicare reimbursement is paid based upon the weighted median of the reported commercial third-party payor payments for the same test, as calculated using the data collected by applicable laboratories and reported to CMS during the specified data collection and reporting period. For clinical diagnostic laboratory tests that are assigned a new or substantially revised code, initial payment rates are assigned by the cross-walk or gap-fill methodology that existed under the prior law. The cross-walk methodology applies when a new test or substantially revised test is determined to be similar to an existing test, multiple existing test codes, or a portion of an existing test code, which can then be utilized to determine a payment. The gap-fill methodology applies when no comparable, existing test is available. In this case, the Medicare Administrative Contractor, or MAC, develops a local payment amount for the new test code and CMS calculates a national limitation amount after a year of payment at the local MAC rates based on the median of rates for the test code across all MACs. Initial payment rates for new advanced diagnostic laboratory tests are based on the actual list charge for the laboratory test.

The revised reimbursement methodology described above generally results in relatively lower reimbursement amounts under Medicare for clinical laboratory services than has been historically reimbursed. Any reductions to

reimbursement rates resulting from the new methodology are limited to 10% per test per year in each of 2018 through 2020 and to 15% per test per year in each of 2021 through 2023.

Laboratory Distribution Partners

We have contracted with other clinical and genetic laboratories for distribution of our products. Our reimbursement for these products comes directly from the contracted laboratory. In some instances, our distribution partners will request that we bill the payor for the provided test on their behalf. In these instances, we collect payment directly from the payor.

Individual Patients

We generally seek to collect co-payments and deductibles directly from patients in cases where we have billed the payor. For these patients, we offer a range of flexible payment plans to assist in the payment of co-payments and deductibles. We also seek to collect payment directly from patients for cash paying patients who do not have or have elected not to use medical insurance. Patients paying out of pocket are generally offered a discounted price. We are not currently promoting or offering direct-to-consumer testing products.

We are subject to applicable state and federal laws regarding who should be billed, how they should be billed, how business should be conducted, and how patient obligations regarding cost sharing should be handled.

Competition in Molecular Testing

Women's Health Molecular Testing

We compete with numerous companies that have developed and commercialized some combination of our core product portfolio: NIPT; carrier screening; and hereditary cancer screening. Our primary competitors include Invitae, Myriad Genetics (which acquired Counsyl in 2018), and Natera. Secondary competitors include Ambry Genetics, GeneDx (a subsidiary of Bio-Reference Laboratories), LabCorp, Quest Diagnostics, Roche Diagnostics, Sema4, and other commercial and academic laboratories. We expect additional competition as other established and emerging companies enter the women's health molecular testing market, including through business combinations.

We believe the principal competitive factors in our market include the following:

- test performance, including sensitivity, specificity, failure rates, and turnaround time, as demonstrated in clinical validation;
- value of product offerings, including pricing and impact on healthcare spending;
- coverage and reimbursement arrangements with third-party payors;
- convenience of testing;
- additional value-added services and digital healthcare tools;
- effectiveness of sales and marketing efforts;
- development and introduction of new, innovative products;
- key opinion leader support;
- brand awareness; and
- ease of integration with healthcare provider practices.

We believe that we compete favorably on the basis of the factors above, particularly in test performance, additional value-added services, and digital healthcare tools, value of product offerings, and effectiveness of sales and marketing efforts.

Preeclampsia

The U.S. market for preeclampsia tests currently includes certain positive or predictive tests such as the predictive Preeclampsia Screen T1 offered by NTD Labs (purchased from Perkin Elmer in 2016) and the GestAssured preeclampsia test using congo red staining offered by GestVision. We expect to offer a noninvasive biomarker test designed to rule out preeclampsia. We anticipate that our test would compete favorably by providing superior sensitivity, specificity, and high NPV to rule out preeclampsia in symptomatic women as compared to existing clinical assessment tools, including those discussed above.

Testing Services

The market for anatomic pathology and molecular testing is highly competitive. We compete with a vast network of local and regional pathology groups, national laboratories, hospital-based laboratories, and physician-owned laboratories. Competition in the industry is based on several factors including price, quality of service, accuracy of results, clinical expertise, test menu, turnaround time of test results, commercial strategy and execution, ability to retain high-quality staff, client relationships, and reputation.

Competition in Precision Medicine

The biotechnology and pharmaceutical industries are characterized by rapid technological advancement, intense competition, and a strong emphasis on intellectual property and proprietary products.

While we believe that our proprietary technology platform, knowledge, experience, and scientific expertise provide us with competitive advantages, we face substantial competition from major pharmaceutical companies, biotechnology companies, academic institutions, government agencies, and public and private research institutions. For any products that we eventually commercialize, we will not only compete with existing technologies and therapies but also with those that may become available in the future.

Given our technology's potential utility across multiple applications, we expect to face intense competition from a diverse set of competitors. Many of our competitors, either alone or with strategic partners, have significantly greater financial, technical and human resources than we do. Competitors may also possess more experience developing, obtaining regulatory approval for, and marketing novel treatments and technologies in the areas we are pursuing. These factors could give our competitors an advantage in recruiting and retaining qualified personnel, completing clinical development, securing strategic partnerships, and commercializing their products. We believe the key competitive factors that will affect the development and commercial success of our product candidates are efficacy, safety and tolerability profile, reliability, method of administration, convenience of dosing, price, and reimbursement.

Recoverable Sampling System

To our knowledge, there are no commercially available ingestible sampling devices representing an immediate competitive threat to our technology. This is, however, a nascent space, and we expect to see future competition from new entrants as companies develop potentially competitive technologies.

PIL Dx—Progenity Ingestible Laboratory Diagnostics

Although we believe that they are comparatively limited in functionality and capability, we face competition from a small number of currently marketed or in-development diagnostic devices and tests specifically targeting GI disorders, such as those from Medtronic and Commonwealth Diagnostics International. Additionally, we will similarly face competition from new entrants as advances in diagnostics and engineering bring new technologies to market.

Drug Delivery System

The current IBD market is both established and mature, comprised of a range of therapeutic agents including branded and generic small molecules, biologics, biosimilars, and involving multiple mechanisms of action as

well as routes of administration. Although we believe our technology platform will provide us with a competitive advantage in its ability to enable targeted delivery of therapeutic agents (and, in particular, biologics) via oral administration, we will face competition from several companies whose current R&D efforts will likely result in the emergence of newer pharmaceuticals touting oral administration, more convenient dosing frequency, novel mechanisms of action, and improved safety profiles and drug availability. We believe that the majority of competition will come from those companies marketing or developing biologics and small molecule therapeutics, such as AbbVie, Allergan, Celgene, Eli Lilly, Galapagos, Gilead, J&J, Pfizer, Roche, Takeda, and UCB.

Oral Biotherapeutic Delivery System

We expect to face competition from a number of technologies currently marketed or being developed to enhance or facilitate the oral administration of therapeutic agents. There is a wide range of competitive technologies and mechanisms that may challenge us.

The primary categories of oral biotherapeutic technologies currently available or being developed by our competitors include:

- Functional excipients designed to enhance the solubility and/or permeability of peptides and small molecules: Emisphere Technologies and Enteris Biopharma;
- Enteric coating technologies designed to prevent gastric degradation of active pharmaceutical ingredients and facilitate GI delivery: Assembly Biosciences, Catalent, Cosmo Pharmaceuticals, Intract Pharma, Lonza, and Tillotts Pharma; and
- Ingestible devices designed for the targeted delivery of a therapeutic payload: Lyndra Therapeutics and Rani Therapeutics.

Intellectual Property

The proprietary nature of, and intellectual property protection for, our existing and future products, processes, and know-how are important to our business. Our success depends in part on our ability to obtain patent and other legal protection for our products, technology, and know-how, to operate without infringing on the proprietary rights of others, and to prevent others from infringing on our proprietary rights. We rely on a combination of patents, trade secrets, know-how, license agreements, and nondisclosure and other contractual provisions to protect our intellectual property rights. These rights cover our proprietary tests, processes, databases, information, and materials across our different businesses. We seek and maintain patent protection in the United States and internationally for our over 400 issued and pending patents, while also in-licensing technology, inventions, and improvements that we consider important to the success of our business. In addition to patent protection, we intend to use other means to protect our products, technology and know-how, including pursuing terms of marketing or data exclusivity for our products, orphan drug status (if applicable) and similar rights that are available under regulatory provisions in certain territories, including the United States and Europe. We also rely on know-how and continuing technological innovation that are protected as trade secrets to develop and maintain our competitive position.

Molecular Testing Technology Patent Portfolio

Our intellectual property rights relating to the molecular testing technology include a patent portfolio consisting of 23 distinct patent families. The 23 families include a total of 60 issued patents and 31 pending applications. Two patent families have not yet published. In general, we file our molecular testing patent applications in the United States, Europe, Canada, China, and sometimes Japan.

The 91 patents and pending applications in this portfolio include claims that are directed to a range of molecular testing-related methods, systems and compositions, including but not limited to, the following:

- detecting chromosomal abnormalities including copy number variations;
- determining allele dosages;

- determining methylation status;
- isolating and analyzing rare cells; and
- diagnosing pregnancy-associated conditions like preeclampsia and preterm birth.

In addition to the patents and applications described above, our intellectual property rights relating to the molecular testing business include know-how relating to proprietary assays, databases, and software products. Examples include the following:

- Proprietary NGS and highly multiplexed polymerase chain reaction assays and panels;
- Discovery and diagnostic algorithms;
- Laboratory, billing, and reimbursement information systems; and
- Variant classification, annotation, and reporting systems.

Precision Medicine Technology Patent Portfolio

Our intellectual property rights relating to our precision medicine technology include a patent portfolio consisting of 78 distinct patent families. The 78 families include a total of 140 issued or allowed patents and 185 pending applications. Thirty of the families were acquired in connection with the acquisition of certain tangible and intangible assets relating to the business formerly operated by Medimetrics GmbH, Medimetrics Personalized Drug Delivery B.V., and Medimetrics Personalized Drug Delivery Inc. In general, we file our precision medicine patent applications in the following patent jurisdictions: the United States, Australia, China, Canada, Europe, and Japan; and sometimes in these additional jurisdictions: Brazil, Eurasia, Hong Kong, Israel, India, South Korea, Mexico, and Singapore.

The 325 patents and pending applications in this portfolio include claims that are directed to a range of gastroenterology-related methods, systems, and compositions, including but not limited to, the following:

- autonomous localization of an ingestible device in the GI tract using visible or infrared light;
- GI sampling mechanisms and compositions, including preservatives for GI analytes;
- ingestible device assays, optics and analytics for quantifying GI analytes;
- ingestible device drug delivery mechanisms and systems;
- targeted topical and systemic delivery of therapeutics, including biologics, peptides, small molecules, nucleic acids, or cells for the treatment of GI conditions;
- ingestible devices for diagnosing, treating, and aiding in the treatment of GI conditions; and
- GI-specific drug formulations and dosing regimens.

Trademarks

Our reputation and brand awareness are very important to us. Accordingly, we invest significant resources in the protection of our trademarks. We have and will continue to pursue the registration of our trademarks, including trademarks for the name Progenity, our logo, and certain of our products, in relevant jurisdictions.

Government Regulation

Regulations Related to Clinical Laboratories

Clinical Laboratory Improvement Amendments of 1988 and State Regulation

As a clinical laboratory, we are required to hold certain federal certifications under the CLIA to conduct our business. Our clinical laboratory facility located in Ann Arbor, Michigan is CLIA certified and is accredited by

CAP, a CLIA-approved accrediting organization, which means that our laboratory has been certified as following CAP guidelines in operating the laboratory and in performing tests that ensure the quality of our results.

Under CLIA, a laboratory is any facility that performs laboratory testing on specimens derived from humans for the purpose of providing information for the diagnosis, prevention, or treatment of disease or the impairment or assessment of health. CLIA requires that such laboratories obtain certification from the federal government and maintain compliance with various operational, personnel qualification, facilities administration, quality control and assurance, and proficiency testing requirements intended to ensure the accuracy, reliability, and timeliness of patient test results. CMS administers the CLIA certification program. CLIA certification is also necessary to bill state and federal healthcare programs, as well as many commercial third-party payors, for laboratory testing services.

CLIA requires that we hold a certificate that specifies the types of testing we perform and that we comply with certain standards applicable to such tests. In addition, CLIA specifies certain testing categories requiring periodic proficiency testing, and certified laboratories performing these tests must enroll in an approved proficiency testing program. To demonstrate proficiency, such laboratories must test specimens received from an outside proficiency testing organization, such as CAP, and then, submit the results back to that organization for evaluation. Failing to achieve a passing score on a proficiency test may lead to loss of certification to perform testing in the corresponding category. Furthermore, failure to comply with other proficiency testing regulations, can result in revocation of the referring laboratory's entire CLIA certification.

In addition, as a condition of CLIA certification, our laboratory is subject to survey and inspection every other year, as well as random inspections at CMS's discretion. The biannual survey is conducted by CMS, a CMS agent (typically a state agency), or, if the laboratory holds a CLIA Certificate of Accreditation, a CMS-approved accreditation organization. Because CLIA is user-fee funded, all costs of administering the program must be covered by the regulated facilities such as ours, including certification and survey costs.

Laboratories performing high-complexity testing are required to meet more stringent requirements than laboratories performing less complex tests. A high-complexity laboratory like ours that is certified under CLIA may develop, validate, and use proprietary tests referred to as LDTs. To date, the FDA has taken the position that generally it will exercise enforcement discretion and not require PMA, or pre-market notification (510(k)) for LDTs, but laboratories may voluntarily submit 510(k) or PMA applications, or *de novo* classification requests, for LDTs to obtain FDA clearance or approval following a demonstration of clinical validity. On the other hand, the CLIA program requires laboratories to demonstrate the analytical validity of any LDT used in clinical testing. All of our current products are LDTs.

CLIA provides that a state may adopt laboratory regulations that are more stringent than those under federal law, and a number of states have implemented their own more stringent laboratory regulatory requirements. State laws may require that laboratory personnel meet certain qualifications, specify certain quality control procedures, facility requirements, or prescribe record maintenance requirements.

California Laboratory Licensing

In addition to federal certification requirements for laboratories under CLIA, licensure is required and maintained for our clinical laboratory under California law because we receive specimens for testing from California. The California licensure law establishes standards for the day-to-day operation of a clinical laboratory, including the training and skills required of personnel and quality control. In addition, California law mandates proficiency testing, which involves testing of specimens that have been specifically prepared for the laboratory.

If a clinical laboratory is out of compliance with California standards, the California Department of Public Health, Laboratory Field Services branch, may suspend, restrict, or revoke its license to operate the clinical laboratory, assess substantial civil money penalties, or impose specific corrective action plans.

New York Laboratory Licensing

Our laboratory receives specimens from New York state, and so we are required to maintain a New York clinical laboratory license, under New York laws and regulations, which establish standards for: (1) day-to-day operation of a clinical laboratory, including training and skill levels required of laboratory personnel; (2) physical requirements of a facility; (3) equipment; and (4) validation and quality control.

New York law also mandates proficiency testing for laboratories licensed under New York state law, regardless of whether or not such laboratories are located in New York. If a laboratory is out of compliance with New York statutory or regulatory standards, the New York State Department of Health may suspend, limit, revoke or annul the laboratory's New York license, censure the holder of the license or assess civil money penalties. Statutory or regulatory noncompliance may result in a laboratory's operator being found guilty of a misdemeanor under New York law. The New York State Department of Health also must approve each specific LDT before the test is offered in New York.

Other State Laboratory Licensing Laws

In addition to New York and California, other states, including Maryland, Pennsylvania, and Rhode Island, require licensing of out-of-state laboratories under certain circumstances. We have obtained licenses in these additional states and believe we are in compliance with applicable licensing laws.

Potential sanctions for violation of state statutes and regulations include significant fines, the disapproval of licensure applications and the suspension or loss of various licenses, certificates and authorizations, which could harm our business. CLIA does not preempt state laws that have established laboratory quality standards that are at least as stringent as federal law.

State Genetic Testing Laws

Many states have implemented genetic testing and privacy laws imposing specific patient consent requirements and protecting test results. In some cases, we are prohibited from conducting certain tests without a certification of patient consent by the physician ordering the test. Requirements of these laws and penalties for violations vary widely.

Federal Oversight of Laboratory Developed Tests

The laws and regulations governing the marketing of diagnostic products are evolving, extremely complex, and in many instances, there are no significant regulatory or judicial interpretations of these laws and regulations. Clinical laboratory tests are regulated under CLIA, as administered by CMS, as well as by applicable state laws In addition, pursuant to its authority under the FD&C Act, the FDA has jurisdiction over medical devices, which include, among other things, *in vitro* diagnostic devices, or IVDs, intended for clinical purposes. LDTs are a subset of IVDs that are designed, manufactured, and used within a single laboratory. The FDA regulates, among other matters, the research, testing, manufacturing, safety, labeling, storage, recordkeeping, premarket clearance or approval, marketing and promotion and sales and distribution of medical devices, including IVDs, in the United States to ensure that such products on the domestic market are safe and effective for their intended uses. In addition, the FDA regulates the import and export of medical devices.

Although the FDA has statutory authority to assure that medical devices, including IVDs, are safe and effective for their intended uses, the FDA has historically exercised its enforcement discretion and not enforced applicable provisions of the FD&C Act and regulations with respect to LDTs. We believe our tests fall within the scope of the agency's LDT definition. As a result, we believe our molecular tests are not currently subject to the FDA's regulations and the FD&C Act provisions applicable to medical devices and IVDs.

Legislative and administrative proposals to amend FDA's oversight of LDTs have been introduced in recent years and we expect that new legislative and administrative proposals will continue to be introduced from time to

time. It is possible that legislation could be enacted into law or regulations or guidance could be issued by the FDA which may result in new or increased regulatory requirements for us to continue to offer our LDTs or to develop and introduce new tests as LDTs. For example, in recent years, FDA has stated its intention to modify its enforcement discretion policy with respect to LDTs. Specifically, on July 31, 2014, the FDA notified Congress of its intent to modify, in a risk-based manner, its policy of enforcement discretion with respect to LDTs. On October 3, 2014, the FDA issued two draft guidance documents outlining a method for extending regulatory oversight to LDTs. These draft guidance documents were titled "*Framework for Regulatory Oversight of Laboratory Developed Tests*," or Framework Guidance, and "*FDA Notification and Medical Device Reporting for Laboratory Developed Tests*," or Notification Guidance. The Framework Guidance stated that FDA intended to end its policy of enforcement discretion with respect to most LDTs and apply a risk-based regulatory compliance and enforcement approach consistent with the classification of medical devices generally in Classes I through III. The Notification Guidance would have further enabled FDA to collect information regarding the LDTs currently being offered for clinical use through a notification process, as well as to enforce its regulations for reporting safety issues and collecting information on any known or suspected adverse events related to the use of an LDT. The 2014 Framework and Notification Guidances were the subject of much controversy among the device and laboratory industries, healthcare providers, the U.S. Congress, and other stakeholders, and on November 18, 2016, the FDA announced that it would not finalize either guidance document. On January 13, 2017, FDA released a document titled "*Discussion Paper on Laboratory Developed Tests*," or the Discussion Paper, which stated that the agency had declined to finalize the LDT guidances to allow for additional discussion on appropriate regulatory oversight. The Discussion Paper presented a more focused approach to LDT oversight, and stated that under the FDA's current thinking, LDTs marketed before any regulatory framework becomes effective would not be expected to comply with the requirements. The FDA has not issued any proposed rules or guidance documents relating to LDTs since January 2017.

In April 2017, Congress released a discussion draft of the Diagnostic Accuracy and Innovation Act, or DAIA, the first legislative attempt to reform the regulatory framework for LDTs and IVDs since the FDA proposed to overhaul its policy of enforcement discretion with respect to LDTs. DAIA sought to carve LDTs and certain IVDs out of the current definition of "medical devices" by codifying a new defined term, *in vitro* clinical tests, or IVCTs. IVCTs would constitute products currently regulated as IVDs and LDTs, and such products would be regulated differently from medical devices. DAIA proposed a three-tiered risk classification system with corresponding premarket review pathways for each tier. It also sought to establish jurisdictional boundaries between the FDA, CMS, and the states, with FDA oversight over development and manufacturing, CMS oversight over laboratory operations, and individual state oversight over medical use and interpretation. In August 2018, the FDA provided technical drafting assistance on DAIA, issuing comments in the form of a revised version of the draft legislation. Unlike DAIA, the FDA's technical assistance proposed a bifurcated risk classification for IVCTs that would eliminate the middle-risk tier, subject most high-risk IVCTs to premarket approval, and exempt most low-risk IVCTs from premarket review. It would also establish a precertification program that would enable an IVCT developer to be certified by the FDA, or potentially by an FDA-accredited body, as having sufficient skill at developing IVCTs, so as to not require premarket review for each individual test marketed by a certified developer. If included in any enacted law, the FDA's recommendations would also centralize the FDA's jurisdiction, giving the FDA authority to withdraw approvals, request raw data, and take corrective action against test developers. In December 2018, legislators released a discussion draft of a new bill, the Verifying Accurate, Leading-edge IVCT Development, or VALID, Act, which largely incorporated the FDA's proposals, and in April 2019, HHS, issued technical assistance comments on the VALID Act, which largely expressed support for maintaining the FDA's jurisdiction over IVCTs and the proposed precertification program. HHS's comments reflect the most recent action on the VALID Act, which remains only a discussion draft. Even if passed by Congress and signed in to law, many of the proposals in the VALID Act, including the proposed requirements for premarket review and precertification of IVCTs, may take time to be worked out and fully implemented by the FDA, CMS and other regulatory authorities.

In addition, the FDA issued a Safety Communication on October 31, 2018 and updated it on April 4, 2019 in which the FDA advised patients and healthcare providers that claims for many genetic tests to predict a patient's

response to specific medications, referred to as pharmacogenetic tests, have not been reviewed by the FDA, and may not have the scientific or clinical evidence to support this use for most medications. The FDA further noted that changing drug treatment based on the results from pharmacogenetic tests could lead to inappropriate treatment decisions and potentially serious health consequences for patients. In April 2019, the FDA issued a Warning Letter to a laboratory stating that the laboratory was required to obtain marketing authorization for certain pharmacogenetic tests that had previously been marketed as LDTs. The FDA's action reflects a heightened interest in LDTs and a particular concern with the clinical validation of high-risk tests that purport to predict a drug response that may be inconsistent with FDA-approved drug labeling.

Advertising of Laboratory Services or LDTs

Whether regulated by the FDA as a Class I or Class II device or subject to FDA's enforcement discretion as an LDT, our advertising for laboratory services and tests is subject to federal truth-in-advertising laws enforced by the Federal Trade Commission, or FTC, as well as comparable state consumer protection laws. Under the Federal Trade Commission Act, or FTC Act, the FTC is empowered, among other things, to (a) prevent unfair methods of competition and unfair or deceptive acts or practices in or affecting commerce; (b) seek monetary redress and other relief for conduct injurious to consumers; and (c) gather and compile information and conduct investigations relating to the organization, business, practices, and management of entities engaged in commerce. The FTC has very broad enforcement authority, and failure to abide by the substantive requirements of the FTC Act and other consumer protection laws can result in administrative or judicial penalties, including civil penalties, injunctions affecting the manner in which we would be able to market services or products in the future, or criminal prosecution.

Medical Device Regulation

Pursuant to its authority under the FD&C Act, the FDA has jurisdiction over medical devices, including IVDs and other products we are currently developing. The FDA regulates, among other things, the research, design, development, pre-clinical and clinical testing, manufacturing, safety, effectiveness, packaging, labeling, storage, recordkeeping, pre-market clearance or approval, adverse event reporting, marketing, promotion, sales, distribution and import and export of medical devices. Unless an exemption applies, each new or significantly modified medical device we seek to commercially distribute in the United States will require either a premarket notification to the FDA requesting permission for commercial distribution under Section 510(k) of the FD&C Act, also referred to as a 510(k) clearance, or FDA approval of a PMA application. Although the tests we currently market are LDTs, which are subject to FDA's enforcement discretion, we intend to develop certain product candidates, such as ingestible diagnostic products, that are subject to the FDA's premarket review requirements applicable to medical devices.

Device Classification

Under the FD&C Act, medical devices are classified into one of three classes—Class I, Class II or Class III—depending on the degree of risk associated with each medical device and the extent of control needed to provide reasonable assurances with respect to safety and effectiveness.

Class I includes devices with the lowest risk to the patient and are those for which safety and effectiveness can be reasonably assured by adherence to General Controls, which require compliance with the applicable portions of the FDA's QSR, facility registration and product listing, reporting of adverse events and malfunctions, and appropriate, truthful and non-misleading labeling and promotional materials. Some Class I devices also require premarket clearance by the FDA through the 510(k) premarket notification process described below. Most Class I products are exempt from the premarket notification requirements.

Class II devices are those that are subject to the General Controls, as well as Special Controls as deemed necessary by the FDA to ensure the safety and effectiveness of the device. These Special Controls can include performance standards, patient registries, FDA guidance documents, and post-market surveillance. Most Class II devices are subject to premarket review and clearance by the FDA. Premarket review and clearance by the FDA for Class II devices is accomplished through the 510(k) premarket notification process.

Class III devices include devices deemed by the FDA to pose the greatest risk such as life-supporting or life-sustaining devices, or implantable devices, in addition to those deemed novel and not substantially equivalent following the 510(k) process. The safety and effectiveness of Class III devices cannot be reasonably assured solely by the General Controls and Special Controls described above. Therefore, these devices are subject to the PMA application process, which is generally more costly and time-consuming than the 510(k) process. Through the PMA application process, the applicant must submit data and information demonstrating reasonable assurance of the safety and effectiveness of the device for its intended use to the FDA's satisfaction.

510(k) Pathway

To obtain 510(k) clearance, we must submit a premarket notification under Section 510(k) of the FD&C Act demonstrating that the proposed device is "substantially equivalent" to a predicate device. A predicate device is a legally marketed device that is not subject to premarket approval, i.e., a device that was legally marketed prior to May 28, 1976 (pre-amendments device) and for which a PMA is not required, a device that has been reclassified from Class III to Class II or I, or a device that was found substantially equivalent through the 510(k) process. To be "substantially equivalent," the proposed device must have the same intended use as the predicate device, and either have the same technological characteristics as the predicate device or have different technological characteristics and not raise different questions of safety or effectiveness than the predicate device. Clinical data is sometimes required to support substantial equivalence. The FDA's 510(k) clearance pathway usually takes from three to 12 months from the date the notification is submitted, but it can take considerably longer, depending on the extent of FDA's requests for additional information and the amount of time a sponsor takes to fulfill them. After a 510(k) is submitted, the FDA determines whether to accept it for substantive review. If it lacks necessary information for substantive review, the FDA will refuse to accept the 510(k) submission. If it is accepted for filing, the FDA begins a substantive review. By statute, the FDA is required to complete its review of a 510(k) premarket notification within 90 days of receiving the 510(k) submission. As a practical matter, clearance often takes longer, and clearance is never assured.

Although many 510(k) premarket notifications are cleared without clinical data, the FDA may require further information, including clinical data, to make a determination regarding substantial equivalence, which may significantly prolong the review process. If the FDA agrees that the device is substantially equivalent to a predicate device, it will grant clearance to commercially market the device. If the FDA determines that the device is not "substantially equivalent" to a predicate device, or if the device is automatically classified into Class III, the device sponsor must then fulfill the much more rigorous premarketing requirements of the PMA approval process, or seek reclassification of the device through the *de novo* process.

After a device receives 510(k) clearance, any modification, including modification to or deviation from design, manufacturing processes, materials, packaging and sterilization that could significantly affect its safety or effectiveness, or that would constitute a new or major change in its intended use, may require a new 510(k) clearance or, depending on the modification, could require a PMA application. The FDA requires each manufacturer to make this determination initially, but the FDA can review any such decision and can disagree with a manufacturer's determination. If the FDA requires a new 510(k) clearance or approval of a PMA application for any modifications to a previously cleared product, the applicant may be required to cease marketing or recall the modified device until clearance or approval is received. In addition, in these circumstances, the FDA can impose significant regulatory fines or penalties for failure to submit the requisite 510(k) or PMA application(s).

Medical device types that the FDA has not previously classified as Class I, II, or III are automatically classified into Class III regardless of the level of risk they pose. The Food and Drug Administration Modernization Act of 1997 established a new route to market for low to moderate risk medical devices that are automatically placed into Class III due to the absence of a predicate device, called the "Request for Evaluation of Automatic Class III Designation," or the *de novo* classification procedure.

The *de novo* classification procedure allows a manufacturer whose novel device is automatically classified into Class III to request down-classification of its medical device into Class I or Class II on the basis that the device presents low or moderate risk, rather than requiring the submission and approval of a PMA application. Prior to the enactment of the Food and Drug Administration Safety and Innovation Act of 2012, or FDASIA, a medical device could only be eligible for *de novo* classification if the manufacturer first submitted a 510(k) premarket notification and received a determination from the FDA that the device was not substantially equivalent. FDASIA streamlined the *de novo* classification pathway by permitting manufacturers to request *de novo* classification directly without first submitting a 510(k) premarket notification to the FDA and receiving a not substantially equivalent determination. Under FDASIA, the FDA is required to classify the device within 120 days following receipt of the *de novo* application, though in practice the process may take significantly longer. If the manufacturer seeks reclassification into Class II, the manufacturer must include a draft proposal for Special Controls that are necessary to provide a reasonable assurance of the safety and effectiveness of the medical device. In addition, the FDA may reject the reclassification petition if it identifies a legally marketed predicate device that would be appropriate for a 510(k) or determines that the device is not low to moderate risk or that General Controls would be inadequate to control the risks and Special Controls cannot be developed.

PMA Pathway

We must submit a PMA if a device cannot be cleared through the 510(k) clearance or *de novo* process. A PMA application must be supported by extensive data, including, but not limited to, technical information, preclinical data, clinical trial data, manufacturing data, and labeling, to demonstrate to the FDA's satisfaction the safety and efficacy of the device for its intended use.

Following receipt of a PMA application, the FDA conducts an administrative review to determine whether the application is sufficiently complete to permit a substantive review. If it is not, the agency will refuse to file the PMA. If it is, the FDA will accept the application for filing and begin the review. The FDA, by statute and by regulation, has 180 days to review a filed PMA application, although the review of an application more often occurs over a significantly longer period of time. During this review period, the FDA may request additional information or clarification of information already provided, and the FDA may issue a major deficiency letter to the applicant, requesting the applicant's response to deficiencies communicated by the FDA. The FDA considers a PMA or PMA supplement to have been voluntarily withdrawn if an applicant fails to respond to an FDA request for information (*e.g.*, major deficiency letter) within a total of 360 days. Before approving or denying a PMA, an FDA advisory panel may review the PMA at a public meeting and provide the FDA with the committee's recommendation on whether the FDA should approve the submission, approve it with specific conditions, or not approve it. The FDA is not bound by the recommendations of an advisory panel, but it considers such recommendations carefully when making decisions. Prior to approval of a PMA, the FDA may conduct a bioresearch monitoring inspection of the clinical trial data and clinical trial sites, and a QSR inspection of the manufacturing facility and processes. The FDA can delay, limit, or deny approval of a PMA application for many reasons, including:

- the device may not be shown safe or effective to the FDA's satisfaction;
- the data from pre-clinical studies and/or clinical trials may be found unreliable or insufficient to support approval;
- the manufacturing process or facilities may not meet applicable requirements; and
- changes in FDA approval policies or adoption of new regulations may require additional data.

If the FDA evaluation of a PMA is favorable, the FDA will issue either an approval letter, or an approvable letter, the latter of which usually contains a number of conditions that must be met in order to secure final approval of the PMA. When and if those conditions have been fulfilled to the satisfaction of the FDA, the agency will issue a PMA approval letter authorizing commercial marketing of the device, subject to the conditions of approval and the limitations established in the approval letter. If the FDA's evaluation of a PMA application or manufacturing

facilities is not favorable, the FDA will deny approval of the PMA or issue a not approvable letter. The FDA also may determine that additional tests or clinical trials are necessary, in which case the PMA approval may be delayed for several months or years while the trials are conducted and data are submitted in an amendment to the PMA, or the PMA is withdrawn and resubmitted when the data are available. The PMA process can be expensive, uncertain, and lengthy and a number of devices for which the FDA approval has been sought by other companies have never been approved by the FDA for marketing.

New PMA applications or PMA supplements may be required for modifications to the manufacturing process, equipment or facility, quality control procedures, sterilization, packaging, expiration date, labeling, device specifications, components, materials or design of a device that has been approved through the PMA process. PMA supplements often require submission of the same type of information as an initial PMA application, except that the supplement is limited to information needed to support any changes from the device covered by the approved PMA application and may or may not require as extensive technical or clinical data or the convening of an advisory panel, depending on the nature of the proposed change.

In approving a PMA application, as a condition of approval, the FDA may also require some form of postmarket studies or postmarket surveillance, whereby the applicant follows certain patient groups for a number of years and makes periodic reports to the FDA on the clinical status of those patients when necessary to protect the public health or to provide additional or longer term safety and effectiveness data for the device. The FDA may require postmarket surveillance for certain devices approved under a PMA or cleared under a 510(k) notification, such as implants or life-supporting or life-sustaining devices used outside a device user facility, devices where the failure of which would be reasonably likely to have serious adverse health consequences, or devices expected to have significant use in pediatric populations. The FDA may also approve a PMA application with other post-approval conditions intended to ensure the safety and effectiveness of the device, such as, among other things, restrictions on labeling, promotion, sale, distribution, and use.

Clinical Trials

Clinical trials are almost always required to support a PMA and are sometimes required for a 510(k) premarket notification. In the United States, these trials often require submission of an application for an IDE if the investigation involves a significant risk device. Some types of studies deemed to present “non-significant risk” are deemed to have an approved IDE—without affirmative submission of an IDE application to the FDA—once certain requirements are addressed and IRB approval is obtained. The IDE application must be supported by appropriate data, such as animal and laboratory testing results, showing that it is safe to test the device in humans and that the testing protocol is scientifically sound. The IDE must be approved in advance by the FDA for a specified number of patients, unless the product candidate is deemed a non-significant risk device and is eligible for more abbreviated IDE requirements. Clinical trials for a significant risk device may begin once the IDE application is approved by the FDA and appropriate IRBs at the clinical trial sites. Submission of an IDE will not necessarily result in the ability to commence clinical trials, and although the FDA’s approval of an IDE allows clinical testing to go forward for a specified number of subjects, it does not bind the FDA to accept the results of the trial as sufficient to prove the product’s safety and efficacy, even if the trial meets its intended success criteria.

Future clinical trials involving our product candidates will most likely require that we obtain an IDE from the FDA prior to commencing clinical trials and that the trial be conducted under the oversight of IRBs at the clinical trial sites. All clinical trials must be conducted in accordance with the FDA’s IDE regulations that govern investigational device labeling, prohibit promotion, and specify an array of recordkeeping, reporting and monitoring responsibilities of study sponsors and study investigators. Clinical trials must further comply with the FDA’s GCP requirements for IRB approval and for informed consent and other human subject protections. Required records and reports are subject to inspection by the FDA. The results of clinical testing may be unfavorable, or, even if the intended safety and efficacy success criteria are achieved, may not be considered sufficient for the FDA to grant marketing approval or clearance of a product candidate.

Postmarket Requirements—US

After the FDA permits a device to enter commercial distribution, numerous regulatory requirements continue to apply. These include:

- Establishment registration and device listing with the FDA;
- The FDA's QSR, which requires manufacturers, including third-party manufacturers, to follow stringent design, testing, production, control, supplier/contractor selection, complaint handling, documentation and other quality assurance procedures during all aspects of the manufacturing process;
- Labeling regulations, unique device identification requirements and FDA prohibitions against the promotion of products for uncleared, unapproved or off-label uses;
- Advertising and promotion requirements;
- Restrictions on sale, distribution or use of a device;
- PMA annual reporting requirements;
- PMA approval or clearance of a 510(k) for product modifications;
- Medical device reporting, or MDR, regulations, which require that manufacturers report to the FDA if their device may have caused or contributed to a death or serious injury or malfunctioned in a way that would likely cause or contribute to a death or serious injury if the malfunction were to recur;
- Medical device correction and removal reporting regulations, which require that manufacturers report to the FDA field corrections and product recalls or removals if undertaken to reduce a risk to health posed by the device or to remedy a violation of the FD&C Act that may present a risk to health;
- Recall requirements, including a mandatory recall if there is a reasonable probability that the device would cause serious adverse health consequences or death;
- An order of repair, replacement or refund;
- Device tracking requirements; and
- Post-market surveillance regulations, which apply when necessary to protect the public health or to provide additional safety and effectiveness data for the device.

Additionally, once devices are commercialized, manufacturers are subject to unannounced inspections by the FDA to determine compliance with the QSR, which cover the methods and the facilities and controls for the design, manufacture, testing, production, processes, controls, quality assurance, labeling, packaging, distribution, installation and servicing of finished devices intended for human use. The QSR also requires, among other things, maintenance of a device master file, device history file, and complaint files. Manufacturers are subject to periodic scheduled or unscheduled inspections by the FDA. A failure to maintain compliance with the QSR requirements could result in the shut-down of, or restrictions on, manufacturing operations and the recall or seizure of products. The discovery of previously unknown problems with products, including unanticipated adverse events or adverse events of increasing severity or frequency, whether resulting from the use of the device within the scope of its clearance or approval or off-label by a physician in the practice of medicine, could result in restrictions on the device, including the removal of the product from the market or voluntary or mandatory device recalls. In addition, the FDA can issue warning letters or untitled letters, impose injunctions, suspend regulatory clearance or approvals, ban certain medical devices, detain or seize adulterated or misbranded medical devices, order repair, replacement or refund of these devices, and require notification of health professionals and others with regard to medical devices that present unreasonable risks of substantial harm to the public health. The FDA may also initiate action for criminal prosecution of such violations.

There are also certain requirements of state, local, and foreign governments that must be complied with in the manufacturing and marketing of our products once we have the appropriate marketing approvals. We maintain customer complaint files, record all lot numbers of disposable products, and conduct periodic audits to assure compliance with applicable regulations. We will place special emphasis on customer training and advise all customers that device operation should be undertaken only by qualified personnel. In addition to laws and regulations in the United States, we are subject to a variety of laws and regulations in other jurisdictions governing, among other things, clinical trials and any commercial sales and distribution of our product candidates.

Postmarket Requirements—EU

The regulatory review process varies from country to country and may in some cases require the submission of clinical data. Our international sales will be subject to regulatory requirements in the countries in which our product candidates are sold. These regulations will be significantly modified in the next couple of years. For example, in May 2017, the EU Medical Devices Regulation (Regulation 2017/745) was adopted. The EU Medical Devices Regulation, or EU MDR, repeals and replaces the EU Medical Devices Directive. The EU MDR, among other things, is intended to establish a uniform, transparent, predictable, and sustainable regulatory framework across the EEA for medical devices and ensure a high level of safety and health while supporting innovation. The EU MDR will however only become applicable three years after publication (in May 2020). Once applicable, the new regulations will among other things:

- strengthen the rules on placing devices on the market and reinforce surveillance once they are available;
- establish explicit provisions on manufacturers' responsibilities;
- improve the traceability of medical devices;
- set up a central database to provide comprehensive information on products available in the EU; and
- strengthen rules for the assessment of certain high-risk devices before they are placed on the market.

In the meantime, the current EU Medical Devices Directive continues to apply.

Drug and Biologics Regulation

Premarket Requirements—US

Generally, a new drug may be marketed in the United States only if FDA has approved a NDA containing substantial evidence that the new drug is safe and effective for its intended use. A new biologic may generally only be marketed in the United States if FDA has approved a BLA containing substantial evidence that the biologic is safe, pure, and potent for its intended use. The results of preclinical studies and clinical trials, along with information regarding the manufacturing process, analytical tests conducted on the chemistry of the drug, proposed labeling and other relevant information are submitted to the FDA as part of an NDA/BLA, and FDA review and approval of the NDA/BLA is necessary prior to any commercial marketing or sale of a drug or biologic in the United States.

The process generally required by the FDA before a biologic or drug product candidate may be marketed in the United States involves the following:

- completion of preclinical laboratory tests and animal studies performed in accordance with the FDA's Good Laboratory Practice, or GLP, requirements, the Animal Welfare Act, and other laws and regulations, as applicable;
- submission to the FDA of an IND which must become effective before human clinical trials may begin and must be updated at least once annually;

- approval by an IRB, or ethics committee at each clinical site before the trial is initiated;
- performance of adequate and well-controlled clinical trials in accordance with the FDA's GCP requirements and other applicable regulations to establish the safety, purity and potency of the proposed biologic, and the safety and efficacy of the proposed drug for each indication;
- preparation of and submission to the FDA of a BLA or NDA after successful completion of all pivotal clinical trials;
- satisfactory completion of an FDA Advisory Committee review, if applicable;
- a determination by the FDA within 60 days of its receipt of an NDA or BLA to file the application for substantive review;
- satisfactory completion of an FDA pre-approval inspection of the manufacturing facility or facilities at which the proposed product candidate is produced to assess cGMP and to assure that the facilities, methods and controls are adequate for manufacturing of the drug or biologic according to its specifications; and
- FDA review and approval of the BLA or NDA prior to any commercial marketing or sale of the biologic or drug product in the United States.

Preclinical Testing

Before testing any compound or biologic in human subjects in the United States, we must generate extensive preclinical data. Preclinical testing generally includes laboratory evaluation of product chemistry and formulation, as well as toxicological and pharmacological studies in several animal species to assess the quality and safety of the product candidate. Certain animal studies must be performed in compliance with the FDA's GLP regulations and the U.S. Department of Agriculture's Animal Welfare Act.

IND Submission

Human clinical trials for drugs or biologics in the United States cannot commence until an IND is submitted and becomes effective. A company must submit preclinical testing results, together with manufacturing information and analytical data, to the FDA as part of the IND, and the FDA must evaluate whether there is an adequate basis for testing the drug in initial clinical studies in human volunteers. The sponsor will also include a protocol detailing, among other things, the objectives of the initial clinical trial, the parameters to be used in monitoring safety, and the effectiveness criteria to be evaluated, if the initial clinical trial lends itself to an efficacy evaluation. Some preclinical testing may continue even after the IND is submitted. An IND will automatically become effective 30 days after receipt by the FDA, unless before that time the FDA raises concerns or questions related to the proposed clinical studies. In such a case, the IND may be placed on clinical hold and the IND sponsor and the FDA must resolve any outstanding concerns or questions before clinical studies can begin. Once human clinical trials have commenced, the FDA may stop the clinical trials by placing them on "clinical hold" because of concerns about the safety of the product candidate being tested, or for other reasons.

Clinical Trials

Clinical trials involve the administration of the drug to healthy human volunteers or to patients, under the supervision of a qualified investigator. The conduct of clinical trials is subject to extensive regulation, including compliance with the FDA's bioresearch monitoring regulations and GCP requirements, which establish standards for conducting, recording data from, and reporting the results of, clinical trials, and are intended to assure that the data and reported results are credible and accurate, and that the rights, safety, and well-being of study participants are protected. Clinical trials must be conducted under protocols that detail the study objectives, parameters for monitoring safety, and the efficacy criteria, if any, to be evaluated. Each protocol is reviewed by the FDA as part of the IND. In addition, each clinical trial must be reviewed and approved by, and conducted under the auspices of an IRB. Companies sponsoring the clinical trials, investigators, and IRBs also must comply with, as

applicable, regulations and guidelines for obtaining informed consent from the study subjects, following the protocol and investigational plan, adequately monitoring the clinical trial, and timely reporting of adverse events. Foreign studies conducted under an IND must meet the same requirements that apply to studies being conducted in the United States. Data from a foreign study not conducted under an IND may be submitted in support of an NDA or BLA if the study was conducted in accordance with GCP requirements and the FDA is able to validate the data.

A study sponsor is required to publicly post certain details about clinical trials and clinical trial results on government or independent websites (such as http://clinicaltrials.gov). Human clinical trials typically are conducted in three or four sequential phases, although the phases may overlap with one another:

- Phase 1 clinical trials include the initial administration of the investigational drug or biologic to humans, typically to a small group of healthy human subjects, but occasionally to a group of patients with the targeted disease or disorder. Phase 1 clinical trials generally are intended to determine the metabolism and pharmacologic actions of the drug or biologic, the side effects associated with increasing doses, and, if possible, to gain early evidence of effectiveness.
- Phase 2 clinical trials generally are controlled studies that involve a relatively small sample of the intended patient population, and are designed to develop data regarding the product candidate's effectiveness, to determine dose response and the optimal dose range, and to gather additional information relating to safety and potential adverse effects.
- Phase 3 clinical trials are conducted after preliminary evidence of effectiveness has been obtained, and are intended to gather the additional information about safety and effectiveness necessary to evaluate the drug's overall risk-benefit profile for a particular use, and to provide a basis for physician labeling. Generally, Phase 3 clinical development programs consist of expanded, large-scale studies of patients with the target disease or disorder to obtain statistical evidence of the efficacy and safety of the drug at the proposed dosing regimen, or the safety, purity, and potency of a biological product candidate.
- Phase 4 clinical trials may be conducted in some cases, including where the FDA conditions approval of an NDA or BLA for a product candidate on the sponsor's agreement to conduct additional clinical studies after approval. In other cases, a sponsor may voluntarily conduct additional clinical studies after approval to gain more information about the product candidate. Such post-approval studies are typically referred to as Phase 4 clinical trials.

A pivotal trial is a clinical study that is designed to generate substantial evidence of product candidate's safety and efficacy to meet regulatory agency requirements and serve as the basis for approval of the product candidate. Generally, pivotal trials are Phase 3 trials, but the FDA may accept results from Phase 2 trials if the trial design provides a well-controlled and reliable assessment of clinical benefit, particularly in situations where there is an unmet medical need and the results are sufficiently robust.

The sponsoring company, the FDA, or the IRB may suspend or terminate a clinical trial at any time on various grounds, including a finding that the subjects are being exposed to an unacceptable health risk. Further, success in early-stage clinical trials does not assure success in later-stage clinical trials. Data obtained from clinical activities are not always conclusive and may be subject to alternative interpretations that could delay, limit, or prevent regulatory approval. Additionally, some clinical studies are overseen by an independent group of qualified experts organized by the clinical study sponsor, known as a data safety monitoring board or data monitoring committee. This group provides authorization for whether or not a trial may move forward at designated check points based on access to certain data from the trial. We may also suspend or terminate a clinical study based on safety or efficacy concerns, evolving business objectives and/or competitive climate.

During the development of a new drug or biologic, sponsors may seek opportunities to meet with the FDA at certain points. These points may be prior to submission of an IND, at the end of Phase 2, and before an NDA or

BLA is submitted. Meetings at other times may be requested. These meetings can provide an opportunity for the sponsor to share information about the data gathered to date, for the FDA to provide advice, and for the sponsor and the FDA to reach agreement on the next phase of development. For example, sponsors typically use the meetings at the end of the Phase 2 trial to discuss Phase 2 clinical results and present plans for the pivotal Phase 3 clinical trial that they believe will support approval of the new drug or biologic.

Concurrent with clinical trials, companies usually complete additional animal studies and must also develop additional information about the chemistry and physical characteristics of the drug and finalize a process for manufacturing the product in commercial quantities in accordance with cGMP requirements. The manufacturing process must be capable of consistently producing quality batches of the product candidate and, among other things, the manufacturer must develop methods for testing the identity, strength, quality, and purity of the final drug. In addition, appropriate packaging must be selected and tested and stability studies must be conducted to demonstrate that the product candidate does not undergo unacceptable deterioration over its shelf life. While the IND is active and before approval, progress reports summarizing the results of the clinical trials and nonclinical studies performed since the last progress report must be submitted at least annually to the FDA, and written IND safety reports must be submitted to the FDA and investigators for serious and unexpected suspected adverse events, findings from other studies suggesting a significant risk to humans exposed to the same or similar drugs, findings from animal or *in vitro* testing suggesting a significant risk to humans, and any clinically important increased incidence of a serious suspected adverse reaction compared to that listed in the protocol or investigator brochure.

There are also requirements governing the reporting of ongoing clinical trials and completed trial results to public registries. Sponsors of certain clinical trials of FDA regulated products are required to register and disclose specified clinical trial information, which is publicly available at www.clinicaltrials.gov. Information related to the product, patient population, phase of investigation, trial sites and investigators and other aspects of the clinical trial is then made public as part of the registration. Sponsors are also obligated to disclose certain results of their clinical trials after completion.

NDA/BLA Submission and Review

After completing clinical testing of an investigational drug or biologic, a sponsor must prepare and submit an NDA or BLA for review and approval by the FDA. The NDA is a comprehensive, multi-volume application that includes, among other things, the results of preclinical and clinical studies, information about the drug's composition, and plans for manufacturing, packaging, and labeling the drug. For certain product candidates, such as immunotherapeutic antibodies, this information is submitted in a BLA. Data can come from company-sponsored clinical studies intended to test the safety and effectiveness of a use of the product candidate, or from a number of alternative sources, including studies initiated by investigators. Under federal law, the submission of most NDAs and BLAs is subject to an application user fee, and the sponsor of an approved NDA or BLA is also subject to annual prescription drug program fees. These fees are typically increased annually. A waiver of user fees may be obtained under certain limited circumstances.

When an NDA or BLA is submitted, the FDA conducts a preliminary review to determine whether the application is sufficiently complete to be accepted for filing. If it is not, the FDA may refuse to file the application and request additional information, in which case the application must be resubmitted with the supplemental information, and review of the application is delayed.

FDA performance goals generally provide for action on a standard NDA or an original BLA submission within 10 months of the 60-day filing date, but that goal may be extended in certain circumstances. Moreover, the review process is often significantly extended by FDA requests for additional information or clarification. Before approving a BLA or NDA, the FDA typically will inspect the facility or facilities at which the product candidate is manufactured. The FDA will not approve the application unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the

product candidate within required specifications. Additionally, before approving a BLA or NDA, the FDA will typically inspect one or more clinical sites or investigators to assure compliance with GCP requirements. If the FDA determines that the application, clinical data, manufacturing process, or manufacturing facilities are not acceptable, it will outline the deficiencies in the submission and often will request additional testing or information. Notwithstanding the submission of any requested additional information, the FDA ultimately may decide that the application does not satisfy the regulatory criteria for approval.

As part of its review, the FDA may refer an NDA or BLA to an advisory committee for evaluation and a recommendation as to whether the application should be approved. Typically, an advisory committee is a panel of independent experts, including clinicians and other scientific experts, that reviews, evaluates and provides a recommendation as to whether the application should be approved and under what conditions. Although the FDA is not bound by the recommendation of an advisory committee, the agency carefully considers such recommendations when making decisions. The FDA may also determine that a REMS is necessary to ensure that the benefits of a new product candidate outweigh its risks, and the product candidate can therefore be approved. A REMS may include various elements, ranging from medication guides, physician communication plans, or elements to assure safe use, such as restricted distribution methods, patient registries and other risk minimization tools, depending on what the FDA considers necessary for the safe use of the drug.

After review of an NDA or BLA, the FDA may decide to not approve the application and issue a Complete Response letter outlining the deficiencies in the submission. The Complete Response letter also may request additional information, including additional preclinical or clinical data. Even if such additional information and data are submitted, the FDA may decide that the NDA or BLA still does not meet the standards for approval. Data from clinical trials are not always conclusive and the FDA may interpret data differently than the sponsor. Obtaining regulatory approval often takes a number of years, involves the expenditure of substantial resources, and depends on a number of factors, including the severity of the disease in question, the availability of alternative treatments, and the risks and benefits demonstrated in clinical trials. Additionally, as a condition of approval, the FDA may impose restrictions that could affect the commercial success of a drug or require post-approval commitments, including the completion within a specified time period of additional Phase 4 clinical studies.

In addition, the Pediatric Research Equity Act, or PREA, requires a sponsor to conduct pediatric clinical trials for most drugs and biologics, including for a new active ingredient, new indication, new dosage form, new dosing regimen, or new route of administration. Under PREA, original NDAs, BLAs, and supplements thereto must contain a pediatric assessment unless the sponsor has received a deferral or waiver. The required assessment must evaluate the safety and effectiveness of the product for the claimed indications in all relevant pediatric subpopulations and support dosing and administration for each pediatric subpopulation for which the product is safe and effective. The sponsor or FDA may request a deferral of pediatric clinical trials for some or all of the pediatric subpopulations. A deferral may be granted for several reasons, including a finding that the drug or biologic is ready for approval for use in adults before pediatric clinical trials are complete or that additional safety or effectiveness data needs to be collected before the pediatric clinical trials begin.

Post-approval modifications to the drug or biologic product candidate, such as changes in indications, labeling, or manufacturing processes or facilities, may require a sponsor to develop additional data or conduct additional preclinical or clinical trials, to be submitted in a new or supplemental NDA or BLA, which would require FDA approval.

Expedited Development and Review Programs

The FDA has established a number of programs intended to expedite the development and review of products intended to treat serious and life-threatening diseases or conditions. First, the FDA has a Fast Track program that is designed to expedite or facilitate the process for reviewing new drug products intended to treat a serious or life-threatening disease or condition and demonstrate the potential to address unmet medical needs for the disease

or condition. Fast Track designation applies to the product and the specific indication for which it is being studied. For a Fast Track-designated product, the FDA may consider for review sections of the NDA or BLA on a rolling basis before the complete application is submitted.

A product, including a product with a Fast Track designation, may also be eligible for other types of FDA programs intended to expedite development and review, such as priority review and accelerated approval. A product is eligible for priority review if it has the potential to provide safe and effective therapy where no satisfactory alternative therapy exists or a significant improvement in the treatment, diagnosis, or prevention of a disease compared to marketed products. The FDA will attempt to direct additional resources to the evaluation of an application for a new drug designated for priority review in an effort to facilitate the review. The FDA endeavors to review applications with priority review designations within six months of the filing date as compared to ten months for review of original BLAs and new molecular entity NDAs under its standard review goals.

In addition, a product may be eligible for accelerated approval. Drug and biologic products intended to treat serious or life-threatening diseases or conditions may be eligible for accelerated approval upon a determination that the product has an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit, or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality but that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity, or prevalence of the condition and the availability or lack of alternative treatments. As a condition of accelerated approval, the FDA may require that a sponsor of a drug receiving accelerated approval perform confirmatory clinical trials after approval. In addition, the FDA currently requires as a condition for accelerated approval pre-approval of promotional materials, which could adversely impact the timing of the commercial launch of the product. Fast Track designation, priority review, and accelerated approval do not change the standards for approval but may expedite the development or approval process.

The FDA also designates certain products as “breakthrough therapies,” if the product is intended, alone or in combination with one or more other products, to treat a serious or life-threatening disease or condition and preliminary clinical evidence indicates that the product may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. This designation includes all of the Fast Track program features, as well as more intensive FDA interaction and guidance. The Breakthrough Therapy Designation is a distinct status from both accelerated approval and priority review, which can also be granted to the same drug if relevant criteria are met. All requests for breakthrough therapy designation will be reviewed within 60 days of receipt, and the FDA will either grant or deny the request.

Fast track designation, priority review, accelerated approval, and breakthrough therapy designation do not change the standards for approval and may not result in fast or more efficient review.

Hatch-Waxman Act

The Drug Price Competition and Patent Term Restoration Act of 1984, or the Hatch-Waxman Act, establishes two abbreviated approval pathways for pharmaceutical products that are in some way follow-on or bioequivalent versions of drugs approved through the NDA process.

Generic Drugs

A generic version of an approved drug is approved by means of an abbreviated new drug application, or ANDA. An ANDA is a comprehensive submission that contains, among other things, data, and information pertaining to the active pharmaceutical ingredient, drug product formulation, specifications and stability of the generic drug, as well as analytical methods, manufacturing process validation data and quality control procedures. Premarket applications for generic drugs are termed abbreviated because they generally do not include preclinical and clinical data to demonstrate safety and effectiveness. Instead, a generic applicant must demonstrate that its

product performs in the same manner as, or is bioequivalent to, the innovator drug, also referred to as a reference listed drug, or RLD. In certain situations, an applicant may obtain ANDA approval of a generic product with a strength or dosage form that differs from a referenced innovator drug pursuant to the filing and approval of an ANDA Suitability Petition. The FDA will approve the generic product as suitable for an ANDA application if it finds that the generic product does not raise new questions of safety and effectiveness as compared to the innovator product. A product is not eligible for ANDA approval if the FDA determines that it is not bioequivalent to the referenced innovator drug, if it is intended for a different use, or if it is not subject to an approved Suitability Petition. However, such a product might be approved under an NDA, with supportive data from clinical trials.

505(b)(2) NDAs

Section 505(b)(2) of the FD&C Act provides an alternate regulatory pathway to obtain FDA approval for product candidates that represent modifications to formulations or uses of previously approved drug products. Specifically, Section 505(b)(2) permits the filing of an NDA where at least some of the information required for approval comes from studies not conducted by or for the applicant and for which the applicant has not obtained a right of reference. The applicant may rely to some extent upon the FDA's findings of safety and effectiveness for an approved product that acts as the RLD and submit its own product-specific data—which may include data from preclinical studies or clinical trials conducted by or on behalf of the applicant—to address differences between the product candidate and the RLD. Unlike an ANDA, this does not excuse the sponsor from demonstrating the proposed product candidate's safety and effectiveness. Rather, the sponsor is permitted to rely to some degree on the FDA's finding that the RLD is safe and effective, and must submit its own product candidate-specific data of safety and effectiveness to an extent necessary because of the differences between the products. An NDA approved under 505(b)(2) may in turn serve as an RLD for subsequent applications from other sponsors.

RLD Patents

In seeking approval for a drug through an NDA, including a 505(b)(2) NDA, applicants are required to list with the FDA certain patents whose claims cover the applicant's product. Upon approval of an NDA, each of the patents listed in the application for the drug is then published in the FDA publication, *Approved Drug Products with Therapeutic Equivalence Evaluations*, which is referred to as the *Orange Book*. Any applicant who files an ANDA seeking approval of a generic equivalent version of a drug listed in the Orange Book or a 505(b)(2) NDA referencing a drug listed in the Orange Book must certify to the FDA that (1) no patent information on the drug product that is the subject of the application has been submitted to the FDA; (2) such patent has expired; (3) the date on which such patent expires; or (4) such patent is invalid or will not be infringed upon by the manufacture, use or sale of the drug product for which the application is submitted. This last certification is known as a paragraph IV certification. A notice of the paragraph IV certification must be provided to each owner of the patent that is the subject of the certification and to the holder of the approved NDA to which the ANDA or 505(b)(2) application refers. The applicant may also elect to submit a "section viii" statement certifying that its proposed label does not contain (or carves out) any language regarding the patented method-of-use rather than certify to a listed method-of-use patent. If the reference NDA holder and patent owners assert a patent challenge directed to one of the Orange Book listed patents within 45 days of the receipt of the paragraph IV certification notice, the FDA is prohibited from approving the application until the earlier of 30 months from the receipt of the paragraph IV certification expiration of the patent, settlement of the lawsuit or a decision in the infringement case that is favorable to the applicant. The ANDA or 505(b)(2) application also will not be approved until any applicable non-patent exclusivity listed in the Orange Book for the branded reference drug has expired as described in further detail below.

Regulatory Exclusivities

The Hatch-Waxman Act provides periods of regulatory exclusivity for products that would serve as RLDs for an ANDA or 505(b)(2) application. For example, a pharmaceutical manufacturer may obtain five years of

non-patent exclusivity upon NDA approval of a "new chemical entity," or NCE—which is a drug that contains an active moiety that has not been approved by the FDA in any other NDA. An "active moiety" is defined as the molecule or ion responsible for the drug substance's physiological or pharmacologic action. During this five year exclusivity period, the FDA may not accept for filing any ANDA seeking approval of a generic version of that drug or any 505(b)(2) application for a drug with the same active moiety. An ANDA or 505(b)(2) application may be submitted after four years, however, if the sponsor of the application makes a Paragraph IV certification.

A product that is not an NCE, including a product approved through a 505(b)(2) NDA, may qualify for a three-year period of exclusivity if the NDA contains new clinical data, derived from studies conducted by or for the sponsor (other than bioavailability or bioequivalence studies), that were essential for approval. In that instance, the exclusivity period does not preclude filing or review of the ANDA or 505(b)(2) application; rather, the FDA is precluded from granting final approval to the ANDA or 505(b)(2) application until three years after approval of the RLD. Additionally, the exclusivity applies only to the conditions of approval that required submission of the clinical data. For example, if an NDA is submitted for a product candidate that is not an NCE, but that seeks approval for a new indication, and clinical data were required to demonstrate the safety or effectiveness of the product candidate for that new application, the FDA could not approve an ANDA or 505(b)(2) application for another product candidate with that active moiety for that use.

Other Exclusivities

Pediatric Exclusivity. Section 505A of the FD&C Act provides for six months of additional exclusivity or patent protection if an NDA sponsor submits pediatric data that fairly respond to a written request from the FDA for such data. The data do not need to show that the product is effective in the pediatric population studied; rather, if the clinical trial is deemed to fairly respond to the FDA's request, the additional protection is granted. If reports of requested pediatric studies are submitted to and accepted by the FDA within the statutory time limits, whatever statutory or regulatory periods of exclusivity or *Orange Book* listed patent protection that cover the drug are extended by six months. This is not a patent term extension, but it effectively extends the regulatory period during which the FDA cannot approve an ANDA or 505(b)(2) application owing to regulatory exclusivity or listed patents. If and when any drug or biologic product candidate is approved, we will evaluate seeking pediatric exclusivity as appropriate.

Orphan Drug Exclusivity. Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biologic intended to treat a rare disease or condition, which is a disease or condition that affects fewer than 200,000 individuals in the United States or, if it affects more than 200,000 individuals in the United States, there is no reasonable expectation that the cost of developing and making a drug or biologic product available in the United States for this type of disease or condition will be recovered from sales of the product. Orphan designation must be requested before submitting an NDA or BLA. After the FDA grants orphan designation, the identity of the therapeutic agent and its potential orphan use are disclosed publicly by the FDA. Orphan designation does not convey any advantage in or shorten the duration of the regulatory review and approval process.

If a product that has orphan designation subsequently receives the first FDA approval for the disease or condition for which it has such designation, the product is entitled to orphan product exclusivity, which means that the FDA may not approve any other applications to market the same drug or biological product for the same indication for seven years, except in limited circumstances, such as a showing of clinical superiority to the product with orphan exclusivity or inability to manufacture the product in sufficient quantities. The orphan designation of such drug or biologic also entitles a party to financial incentives such as opportunities for grant funding towards clinical trial costs, tax advantages and user fee waivers. However, competitors, may receive approval of different products for the indication for which the orphan product has exclusivity or obtain approval for the same product but for a different indication for which the orphan product has exclusivity. Orphan exclusivity also could block the approval of one of our product candidates for seven years if a competitor obtains approval of the same drug or biologic as defined by the FDA or if our product candidate is determined to be

contained within the scope of the orphan exclusivity of the competitor's product for the same indication or disease. Orphan drug status in the European Union has similar but not identical benefits in that jurisdiction.

The Biologics Price Competition and Innovation Act

The ACA includes a subtitle called the Biologics Price Competition and Innovation Act, which authorizes the FDA to license a biological product candidate that is biosimilar to or interchangeable with an FDA-licensed biologic through an abbreviated pathway. Biosimilarity, which requires that there be no clinically meaningful differences between the biological product and the reference product in terms of safety, purity, and potency, can be shown through analytical studies, animal studies, and a clinical study or studies. Interchangeability requires that a product is biosimilar to the reference product and the product must demonstrate that it can be expected to produce the same clinical results as the reference product in any given patient and, for products that are administered multiple times to an individual, the biologic and the reference biologic may be alternated or switched after one has been previously administered without increasing safety risks or risks of diminished efficacy relative to exclusive use of the reference biologic. Complexities associated with the larger, and often more complex, structures of biological products, as well as the processes by which such products are manufactured, pose significant hurdles to implementation of the abbreviated approval pathway that are still being addressed by the FDA.

The BPCIA establishes criteria for determining that a product candidate is biosimilar to an already-licensed biologic, or reference product, and establishes a process by which a BLA for a biosimilar product candidate is submitted, reviewed, and licensed. The BPCIA provides periods of exclusivity that protect a reference product from biosimilars competition. Under the BPCIA, the FDA may not accept a biosimilar application for review until four years after the date of first licensure of the reference product, and the biosimilar may not be licensed until at least 12 years after the reference product's approval. During this twelve year period of exclusivity, another company may still market a competing version of the reference product if the FDA approves a BLA for the competing product containing the sponsor's own preclinical data and data from adequate and well controlled clinical trials to demonstrate the safety, purity, and potency of their product.

Additionally, the BPCIA establishes procedures by which the biosimilar applicant provides information about its application and product candidate to the reference product sponsor, and by which information about potentially relevant patents may be shared and litigation over patents may proceed in advance of approval. The timing of final FDA approval of a biosimilar for commercial distribution depends on a variety of factors, including whether the manufacturer of the reference product is entitled to one or more statutory exclusivity periods, during which time the FDA is prohibited from approving any product candidates that are biosimilar to the branded product. The BPCIA also provides a period of exclusivity for the first biosimilar determined by the FDA to be interchangeable with the reference product. To date, the FDA has not approved an interchangeable biosimilar product, and at this juncture, it is unclear whether products deemed "interchangeable" by the FDA will, in fact, be readily substituted by pharmacies, as these substitution practices are governed by state pharmacy law.

The contours of the BPCIA continue to be defined as the statute is implemented over a period of years. This likely will be accomplished by a variety of means, including decisions related to the statute by the relevant federal courts. The FDA has to date issued various guidance documents and other materials indicating the agency's thinking regarding a number of issues implicated by the BPCIA. Additionally, the FDA's approval of a number of biosimilar applications in recent years has helped define the agency's approach to certain issues. However, the ultimate impact, implementation, and meaning of the BPCIA remains subject to significant uncertainty.

Post-Approval Regulation of Drug and Biologic Products

Once a drug or biologic is approved, it and its manufacturer will be subject to continuing regulation by the FDA. If ongoing regulatory requirements are not met or if safety problems occur after a product reaches the market, the FDA may at any time withdraw product approval or take actions that would limit or suspend marketing. Additionally, the FDA may require post-marketing studies or clinical trials if new safety information develops.

Once we are engaged in manufacturing approved drug or biologic products or their components, we must comply with applicable cGMP requirements and product-specific regulations enforced by the FDA and other regulatory agencies. Compliance with cGMP includes adhering to requirements relating to organization and training of personnel, buildings and facilities, equipment, control of components and drug product containers and closures, production and process controls, quality control and quality assurance, packaging and labeling controls, holding and distribution, laboratory controls, and records and reports. The FDA regulates and inspects equipment, facilities, and processes used in manufacturing pharmaceutical or biologic products prior to approval. If, after receiving approval, a company makes a material change in manufacturing equipment, location, or process (all of which are, to some degree, incorporated in the NDA or BLA), additional regulatory review and approval may be required. The FDA also conducts regular, periodic visits to re-inspect equipment, facilities, and processes following the initial approval of a product. Failure to comply with applicable cGMP requirements and conditions of product approval may lead the FDA to seek sanctions, including fines, civil penalties, injunctions, suspension of manufacturing operations, operating restrictions, withdrawal of FDA approval, seizure, or recall of products, and criminal prosecution.

The FDA and other federal regulatory agencies closely regulate the marketing and promotion of drugs and biologics through, among other things, standards and regulations for direct-to-consumer advertising, advertising and promotion to healthcare professionals, communications regarding unapproved uses, industry-sponsored scientific and educational activities, and promotional activities involving the Internet. A product candidate cannot be promoted as safe or effective for any use before it is approved. After approval, product promotion can include only those claims relating to safety and effectiveness that are consistent with the labeling approved by the FDA. Healthcare providers are permitted to prescribe drugs and biologics for "off-label" uses—that is, uses not approved by the FDA and therefore not described in the product's labeling—because the FDA does not regulate the practice of medicine. However, FDA regulations impose stringent restrictions on manufacturers' communications regarding off-label uses. Broadly speaking, a manufacturer may not promote a drug or biologic for off-label use, but under certain conditions may engage in non-promotional, balanced, scientific communication regarding off-label uses. Failure to comply with applicable FDA requirements and restrictions in this area may subject a company to adverse publicity and enforcement action by the FDA, the DOJ, or the HHS Office of Inspector General, or OIG, as well as state authorities. This could subject a company to a range of penalties that could have a significant commercial impact, including civil and criminal fines and agreements that materially restrict the manner in which a company promotes or distributes drug or biological products.

The FDA may withdraw approval if compliance with regulatory requirements and standards is not maintained or if problems occur after the product reaches the market. Later discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, or with manufacturing processes, or failure to comply with regulatory requirements, may result in revisions to the approved labeling to add new safety information; imposition of post-market studies or clinical studies to assess new safety risks; or imposition of distribution restrictions or other restrictions under a REMS program. Other potential consequences include, among other things:

- restrictions on the marketing or manufacturing of the product, complete withdrawal of the product from the market or product recalls;
- adverse publicity, fines, warning letters or holds on post-approval clinical trials;
- refusal of the FDA to approve pending applications or supplements to approved applications, or suspension or revocation of product license approvals;
- product seizure or detention, or refusal to permit the import or export of products; or
- injunctions or the imposition of civil or criminal penalties.

Other Requirements

In addition, if we hold approved NDAs or BLAs and/or manufacture or distribute drug or biological products, we must comply with other regulatory requirements, including registration and listing, submitting annual reports,

reporting information about adverse drug experiences, and maintaining certain records. Similar, and in some cases additional, requirements exist in other countries, including the EU.

EU Requirements

We must obtain the requisite marketing authorizations from regulatory authorities in foreign countries prior to the commencement of clinical trials or marketing of a product in those countries. Certain countries outside of the United States have a similar process that requires the submission of a clinical trial application, or CTA, much like an IND, prior to the commencement of clinical trials. In the EU, for example, a CTA must be submitted to the national health authority of each EU Member State in which the clinical trial is to be conducted and to an independent ethics committee, much like the FDA and an IRB, respectively. Once the CTA is approved in accordance with a country's requirements, clinical trial development may proceed.

The requirements and process governing the conduct of clinical trials, product licensing, pricing, and reimbursement vary from country to country. In all cases in EU Member States, for example, the clinical trials must be conducted in accordance with GCP requirements, applicable regulatory requirements, and ethical principles that have their origin in the Declaration of Helsinki. Other EU requirements include regulations concerning marketing authorizations, pricing and reimbursement, patient rights in cross-border healthcare, advertising, and promotion, interactions with physicians, bribery, and corruption.

For other countries outside of the EU, such as countries in Eastern Europe, Central and South America, or Asia, the requirements governing the conduct of clinical trials, product licensing, pricing, and reimbursement vary from country to country. In all cases, again, the clinical trials are conducted in accordance with GCP requirements, applicable regulatory requirements, and ethical principles that have their origin in the Declaration of Helsinki.

If we fail to comply with applicable foreign regulatory requirements, we may be subject to, among other things, warning letters or untitled letters, injunctions, civil, administrative, or criminal penalties, monetary fines or imprisonment, suspension or withdrawal of regulatory approvals, suspension of ongoing clinical studies, refusal to approve pending applications or supplements to applications filed by us, suspension or the imposition of restrictions on operations, product recalls, the refusal to permit the import or export of our products or the seizure or detention of products.

Combination Products

A combination product is the combination of two or more regulated components, i.e., drug/device, biologic/device, drug/biologic, or drug/device/biologic, that are combined or mixed and produced as a single entity; packaged together in a single package or as a unit; or a drug, device, or biological product packaged separately that according to its investigational plan or proposed labeling is intended for use only with an approved individually specified drug, device, or biological product where both are required to achieve the intended use, indication, or effect.

To determine which the FDA center or centers will review a combination product candidate submission, companies may submit a request for assignment to the FDA. Those requests may be handled formally or informally. In some cases, jurisdiction may be determined informally based on FDA experience with similar products. However, informal jurisdictional determinations are not binding on the FDA. Companies also may submit a formal Request for Designation to the FDA Office of Combination Products. The Office of Combination Products will review the request and make its jurisdictional determination within 60 days of receiving a Request for Designation.

FDA will determine which center or centers within the FDA will review the product candidate and under what legal authority the product candidate will be reviewed. Depending on how the FDA views the product candidates that are developed, the FDA may have aspects of the product candidate reviewed by the FDA's Center for

Biologics Evaluation and Research, Center for Devices and Radiological Health and Center for Drug Evaluation and Research, though one center will be designated as the center with primary jurisdiction, based on the product candidate's primary mode of action. The FDA determines the primary mode of action based on the single mode of action that provides the most important therapeutic action of the combination product candidate—the mode of action expected to make the greatest contribution to the overall intended therapeutic effects of the combination product candidate. The review of such combination product candidates is often complex and time consuming, as the FDA may select the combination product candidate to be reviewed and regulated by one or multiple of the FDA centers identified above, which could affect the path to regulatory clearance or approval. Furthermore, the FDA may also require submission of separate applications to multiple centers.

We are developing certain product candidates, that are subject to regulation in the United States as combination products. We believe that the primary mode of action of these candidates is the drug or biologic component. We expect to seek approval for these candidates through submission of a BLA for biologic candidates and through submission of a NDA submitted under section 505(b)(2) of the FD&C Act for small molecule candidates. Based on a pre-IND meeting, we do not expect that the FDA will require a separate marketing authorization for each constituent of these product candidates.

The post-market requirements that apply to the cleared or approved product will largely be aligned with the agency center determined to have primary jurisdiction over the product candidate and that provided marketing authorization, but manufacturers must also comply with certain post-market requirements with respect to the constituent parts of combination products. In April 2019, FDA published a final guidance document entitled *Compliance Policy for Combination Product Postmarketing Safety Reporting*, which is intended to assist manufacturers of combination products comply with reporting requirements applicable to such products.

After issuing marketing authorizations, the FDA has discretion in determining post-approval compliance requirements for combination products and could thus require compliance with certain cGMP requirements as well as QSR requirements for device components of a combination product. Other post-market requirements analogous to those described above for medical devices and drugs/biologics will also apply, depending on the application type and center overseeing regulation of the combination product, including:

- Post-market adverse event and Medical Device Reporting requirements;
- Labeling regulations and FDA prohibitions against the promotion of products for uncleared, unapproved or off-label uses;
- Advertising and promotion requirements;
- Restrictions on sale, distribution or use of the product;
- Requirements for recalls being conducted and recall reporting;
- Product tracking requirements;
- Post-market surveillance or clinical trials; and
- Other record-keeping requirements.

HIPAA and Other Data Privacy and Security Laws

We are subject to data privacy and security regulation by both the federal government and the states in which we conduct our business. The regulations promulgated under HIPAA, as amended by HITECH, impose privacy, security and breach reporting obligations with respect to individually identifiable health information upon "covered entities" (health plans, healthcare clearinghouses and certain healthcare providers), and their respective "business associates," individuals or entities that create, receive, maintain, or transmit PHI, in connection with providing a service for or on behalf of a covered entity. Under HIPAA, covered entities must also enter into agreements with their business associates, which require the business associates to protect any PHI provided by

the covered entity against improper use or disclosure. HITECH also increased the civil and criminal penalties that may be imposed against covered entities and business associates, and gave state attorneys general new authority to file civil actions for damages or injunctions in federal courts to enforce the federal HIPAA laws and seek attorney's fees and costs associated with pursuing federal civil actions. Additionally, HITECH mandates the reporting of certain breaches of health information to HHS, affected individuals, and if the breach is large enough, the media.

HITECH makes specific HIPAA privacy and security requirements directly applicable to business associates. We are both a covered entity and a business associate of our covered entity customers. Under the terms of the business associate agreements into which we have entered, we have certain obligations regarding the use and disclosure of any PHI that may be provided to us, and we could incur significant liability if we do not meet such obligations.

HHS promulgated various requirements under HIPAA with which we must comply. HHS rules define standards for electronic transactions, which establish standards for common healthcare transactions, such as claims information, plan eligibility, payment information, and the use of electronic signatures. We must also follow standards for the privacy of individually identifiable health information, which limit use and disclosure of most written and oral communications, including those in electronic form, regarding a patient's past, present or future physical or mental health or condition or disclosing healthcare provided to the individual or payment for that healthcare, if the individual may be identified from such information. In addition, HIPAA's security standards require us to ensure the confidentiality, integrity, and availability of all electronic PHI we create, receive, maintain, or transmit, to protect against reasonably anticipated threats or hazards to the security of such information and to protect such information from unauthorized use or disclosure.

There are significant civil and criminal fines and other penalties that may be imposed for violating HIPAA. A covered entity or business associate is also liable for civil money penalties for a violation that is based on an act or omission of any of its agents, which may include a downstream business associate, as determined according to the federal common law of agency. HITECH also increased the civil and criminal penalties applicable to covered entities and business associates and gave state attorneys general new authority to file civil actions for damages or injunctions in federal courts to enforce HIPAA and seek attorneys' fees and costs associated with pursuing federal civil actions. To the extent that we submit electronic healthcare claims and payment transactions that do not comply with the electronic data transmission standards established under HIPAA and HITECH, payments to us may be delayed or denied.

Regardless of the applicability of HIPAA or other data privacy laws or regulations, failing to take what the FTC perceives to be appropriate steps to keep consumers' personal information secure may result in the FTC bringing a claim that a company has engaged in unfair or deceptive acts or practices in or affecting commerce in violation of Section 5(a) of the Federal Trade Commission Act, or the FTCA, 15 U.S.C. § 45(a). The FTC expects a company's data security measures to be reasonable and appropriate in light of the sensitivity and volume of consumer information it holds, the size and complexity of its business, and the cost of available tools to improve security and reduce vulnerabilities. Individually identifiable health information is considered sensitive data that merits stronger safeguards. In addition, state consumer protection laws, which may or may not be modeled on the FTCA, may provide state-law causes of action for allegedly unfair or deceptive practices, among other things, including causes of action for alleged data privacy violations.

Moreover, various state and non-U.S. laws and regulations, such as the GDPR, may govern the privacy and security of health information in certain circumstances. Some of these laws and regulations are more stringent than HIPAA, and many differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts. Failure to comply with these laws, where applicable, can result in the imposition of significant civil and/or criminal penalties and private litigation.

Healthcare Fraud and Abuse Laws

The federal Anti-Kickback Statute, or AKS, makes it a crime for a provider or supplier, including a laboratory, to knowingly and willfully offer, pay, solicit, or receive payments, directly or indirectly, in order to induce business reimbursable under any federal healthcare program. An intentional violation of the AKS may result in imprisonment for up to ten years and/or criminal fines of up to $100,000. The U.S. government may also assess civil monetary penalties under AKS and seek to exclude the provider from participation in Medicare, Medicaid, and other federal healthcare programs.

Actions that violate the federal AKS or similar laws may also involve liability under the federal False Claims Act, or FCA, which prohibits knowingly presenting or causing to be presented a false, fictitious, or fraudulent claim for payment to the U.S. government. Although the AKS and FCA apply only to federal healthcare programs, a number of states have passed substantially equivalent laws in which similar types of prohibitions are made applicable to other, non-federal health plans and third-party payors.

Federal and state law enforcement authorities scrutinize arrangements between healthcare providers and potential referral sources to ensure that the arrangements are not designed as a mechanism to induce patient care referrals and opportunities. The law enforcement authorities, the courts, and Congress have also demonstrated a willingness to look behind the formalities of a transaction to determine the underlying purpose of payments between healthcare providers and actual or potential referral sources. Generally, courts have taken a broad interpretation of the scope of the federal AKS, holding that the statute may be violated if merely one purpose of a payment arrangement is to induce future referrals.

In December 1994 and in June 2014, the OIG issued Special Fraud Alerts on arrangements for the provision of clinical laboratory services and relationships between laboratories and referring physicians. The alerts described multiple practices allegedly employed by some clinical laboratories and healthcare providers that potentially violate federal fraud and abuse laws, including the AKS. The OIG emphasized that when a purpose of such arrangements is to induce referrals for reimbursed laboratory testing, both the clinical laboratory and the healthcare provider may be liable under the AKS, and may be subject to criminal prosecution and exclusion from participation in Medicare and Medicaid.

Recognizing that the AKS is broad and may technically prohibit innocuous or beneficial arrangements for the provision of healthcare services, HHS developed a series of regulatory “safe harbors.” These safe harbor provisions assure healthcare providers and other parties that they may not be prosecuted under the AKS, as long as all applicable requirements are met. Although full compliance with these provisions protects against prosecution under the AKS, the failure of a transaction or arrangement to fit squarely within a specific safe harbor does not necessarily mean that it is illegal or that the OIG will pursue prosecution under the AKS.

While we believe we are not in violation of the AKS, we cannot provide assurance that our relationships with physicians, hospitals, and other customers will not be subject to scrutiny or will survive regulatory challenge. If imposed for any reason, sanctions under the AKS could have a negative effect on our business.

In addition to the requirements that are discussed above, there are several other healthcare fraud and abuse laws that could have an impact on our business. The federal FCA prohibits a person from knowingly submitting or causing to be submitted false claims or making a false record or statement in order to secure payment by the federal government. In addition to actions initiated by the government itself, the statute’s “whistleblower,” or “qui tam,” provisions authorizes actions to be brought on behalf of the federal government by a private party having knowledge of the alleged fraud, also known as a relator. Because a qui tam complaint is initially filed under seal, the action may be pending for some time before the defendant is even aware of the action. If the government is ultimately successful in obtaining monetary damages in the matter, or if the relator succeeds in obtaining monetary damages without the government’s involvement, the relator will receive a percentage of the recovery. Violation of the FCA may result in fines of up to three times the actual damages sustained by the

government, plus mandatory civil penalties of up to approximately $22,000 for each separate false claim, imprisonment, or both, and possible exclusion from government healthcare programs, including Medicare and Medicaid.

We are also subject to a federal law commonly known as the Stark Law, which prohibits, with certain exceptions, "self-referrals," which in our case means payments made by a laboratory to a physician in exchange for the provision of clinical laboratory services, presenting or causing to be presented claims to Medicare and Medicaid for laboratory tests referred by physicians who personally, or through a family member, have an investment interest in, or a compensation arrangement with, the clinical laboratory performing the tests. A person who attempts to circumvent the Stark Law may be fined up to approximately $165,000 for each arrangement or scheme that violates the statute. In addition, any person who presents or causes to be presented a claim to the Medicare or Medicaid programs in violation of the Stark Law is subject to civil monetary penalties up to approximately $25,000 per claim, additional fines of up to three times the amount of reimbursement claimed, and possible exclusion from government healthcare programs, including Medicare and Medicaid. Claims that violate the Stark Law may not be paid by Medicare or Medicaid, and any person collecting any amounts under such claims is obligated to refund the payment.

Various states have also enacted self-referral restrictions with which we have to comply and which differ from those imposed by the federal Stark Law.

While we have attempted to comply with the federal fraud and abuse laws, and similar laws of other states, some of our arrangements could be subject to regulatory scrutiny, and we cannot provide assurance that we will be found to be in compliance with these laws following regulatory review.

Further, in addition to the privacy and security regulations stated above, HIPAA created two federal crimes: (1) healthcare fraud and (2) false statements relating to healthcare matters. The healthcare fraud statute prohibits knowingly and willfully defrauding a healthcare benefit program, including private payors. A violation of this statute may result in fines, imprisonment, or exclusion from government healthcare programs. The false statements statute prohibits knowingly and willfully falsifying, concealing, or covering up a material fact or making a materially false, fictitious, or fraudulent statement in connection with the delivery of or payment for healthcare benefits, items, or services. A violation of this statute may result in fines or imprisonment.

Finally, federal law prohibits any entity from offering or transferring to a Medicare or Medicaid beneficiary any remuneration that the entity knows or should know is likely to influence the beneficiary's selection of a particular provider, practitioner or supplier of Medicare or Medicaid payable items or services, including waivers of copayments and deductible amounts (or any part thereof) and transfers of items or services for free or for other than fair market value. Any violation of these prohibitions may result in civil monetary penalties up to $20,000 for each wrongful act. Although we believe that our sales and marketing practices comply in all materials respects with all applicable federal and state laws and regulations, regulatory authorities may disagree. Any identified violation of applicable fraud and abuse laws could result in significant fines or our exclusion from Medicare, Medicaid, and other governmental programs, which could have a material adverse effect on our business, results of operations, financial condition, and cash flows.

Regulations Related to Our Precision Medicine Business

Due to the variety of product candidates that we are developing, we and our product candidates will be subject to a wide variety of regulations promulgated by the FDA. Specifically, our product candidates are subject to regulation by the FDA's Center for Biologics Evaluation and Research, Center for Devices and Radiological Health and Center for Drug Evaluation and Research, as well as other non-U.S. regulatory bodies (should we develop the product candidates and seek to obtain regulatory clearances or approvals to market outside of the United States).

Avero Diagnostics Relationship and the Corporate Practice of Medicine

Through one of our wholly-owned subsidiaries, we have a contractual relationship with Mattison Pathology, LLP, dba Avero Diagnostics, a professional partnership organized in Texas. We provide certain management services to Avero Diagnostics in accordance with the terms of a management services arrangement, and a separate nominee agreement provides us the right, but not the obligation, to designate persons to purchase the stock of Avero Diagnostics at any time for a nominal amount. We receive a management fee equal to the net operating income of Avero Diagnostics.

We have determined that Avero Diagnostics is a variable interest entity and that Progenity is the primary beneficiary, resulting in the consolidation of Avero Diagnostics as required by the accounting guidance for consolidation.

The laws of certain states in which we operate or may operate in the future prohibit non-physician entities from practicing medicine, exercising control over physicians or engaging in certain practices such as fee-splitting with physicians. Although we believe that we have structured our affiliation with Avero Diagnostics so that the physicians maintain exclusive authority regarding the delivery of medical care, there can be no assurance that these laws will be interpreted in a manner consistent with our practices or that other laws or regulations will not be enacted in the future that could have a material adverse effect on our business. Regulatory authorities and other parties, including our associated physicians, may assert that, despite the management service agreement and other arrangements through which we operate, we are engaged in the prohibited corporate practice of medicine and/or that our contractual arrangement with Avero Diagnostics constitutes unlawful fee-splitting. If a corporate practice of medicine or fee-splitting law is interpreted in a manner that is inconsistent with our practices, we would be required to restructure or terminate our relationship with Avero Diagnostics to bring its activities into compliance with such law. A determination of noncompliance, the termination of or failure to successfully restructure this relationship could result in disciplinary action, penalties, damages, fines, and/or a loss of revenue, any of which could have a material adverse effect on our business, financial condition, or operating results.

Environmental Matters

Our operations require the use of hazardous materials (including biological materials), which materials subject us to a variety of federal, state, and local environmental and safety laws and regulations. Some of these laws and regulations provide for strict liability, potentially holding a party liable without regard to fault or negligence. We could be held liable for damages and fines as a result of our, or others', business operations should contamination of the environment or individual exposure to hazardous materials occur. We cannot predict how new, or changes in, laws or regulations will affect our business, operations, or the cost of compliance.

Facilities

Our headquarters are located in San Diego, California, where we lease 25,795 square feet of office space. Our lease expires in June 2023.

We own property in Ann Arbor, Michigan that we use for laboratory testing and research and such property is subject to a mortgage. We also lease approximately 26,000 square feet of office space in Ann Arbor, Michigan. Our lease expires in October 2023, and we have an option to extend it through at least October 2028.

We own property located in Lubbock, Texas that we use for the purpose of laboratory testing for Avero Diagnostics and such property is subject to a mortgage. We also lease approximately 42,000 square feet of laboratory testing and research space for Avero Diagnostics in Irving, Texas. Our lease expires in November 2022, and we have an option to extend it through November 2027.

We believe that our current facilities are adequate for our needs. We also believe we will be able to obtain additional space, as needed, on commercially reasonable terms.

Employees

As of November 26, 2019, we had 701 full-time employees. None of our employees is represented by a labor union or covered by a collective bargaining agreement with respect to his or her employment with us. We consider our relationship with our employees to be good.

Legal Proceedings

Federal Investigations

In April 2018, we received a civil investigative demand from an Assistant U.S. Attorney for the Southern District of New York and a HIPAA subpoena issued by an Assistant U.S. Attorney for the Southern District of California. In May 2018, we received a subpoena from the State of New York Medicaid Fraud Control Unit. While we have not been served with a civil or criminal complaint, we are currently under federal civil and criminal investigations, and state civil investigations, regarding discontinued legacy billing practices for our NIPT and microdeletion tests and for the provision of potential kickbacks or inducements to physicians and patients. The civil investigations also include inquiries about our laboratory licenses, our enrollment in state Medicaid programs, and the laboratories that performed testing for us. We have met several times with representatives from the government entities conducting the related investigations, together as a group, to discuss the potential for a global resolution of all issues with all entities, which may include governmental entities and others that are not currently participating in such discussions. There can be no assurance as to whether or when the parties will finalize any negotiated resolution or what the final terms of such a resolution will be.

We cannot provide any assurance as to the ultimate outcome or that an adverse resolution would not have a material adverse effect on the our business, financial condition, and results of operations. See the risk factor titled “If we or our commercial partners act in a manner that violates healthcare laws or otherwise engage in misconduct, we could face substantial penalties and our business operations and financial condition could be adversely affected.”

Texas OIG Inquiry

On October 16, 2019, we received an inquiry from the Texas Health & Human Services Commission Office of Inspector General, or the TX OIG, alleging that we did not hold the required CLIA Laboratory Certificate of Accreditation to perform, bill for, or be reimbursed by the Texas Medicaid Program of certain tests performed by us from January 1, 2015 through December 31, 2018. Although we believe that we hold and have held all required CLIA certificates and/or subcontract with third-party laboratories that hold and have held such certificates to perform all of the tests subject to the TX OIG inquiry, there can be no assurance that the TX OIG will agree with this position. We submitted a written response to the inquiry on October 23, 2019 and are awaiting a response from the TX OIG on the matter. It is not possible to predict the outcome of these matters and the timing for resolution.

MANAGEMENT

Directors, Executive Officers, and Key Employees

The following table sets forth certain information regarding our directors, executive officers, and key employees as of the date of this prospectus.

Name	Age	Position
Harry Stylli, Ph.D.	58	Chairman and Chief Executive Officer
Jeffrey D. Alter(1)(2)	57	Director
John T. Bigalke(1)(3)(5)	65	Director
Jeffrey A. Ferrell(2)(3)	45	Director
Brian L. Kotzin, M.D.(2)(4)	70	Director
Samuel R. Nussbaum, M.D.(3)(4)(5)	71	Director
Lynne Powell(1)(4)(5)	53	Director
Eric d'Esparbes	52	Chief Financial Officer
Sami Shihabi	48	Chief Commercial Officer
Matthew Cooper, Ph.D.	47	Chief Scientific Officer
Clarke Neumann, J.D.	56	General Counsel and Secretary
George Gianakopoulos	58	Senior Vice President of Sales

(1) Memberof the Audit Committee.
(2) Memberof the Compensation Committee.
(3) Memberof the Nominating/Corporate Governance Committee.
(4) Memberof the Science Committee.
(5) Memberof the Special Committee.

The following is a biographical summary of the experience of our directors, executive officers, and key employees:

Harry Stylli, Ph.D.

Dr. Stylli has served as the Chairman of our Board and our Chief Executive Officer since August 2018. Previously, he served as the Executive Chairman of our Board from January 2013 to August 2018 and as the Chairman of our Board from January 2011 to January 2013. He has also served as executive chairman of the board of directors at OncoCell MDx, a diagnostic testing company, since April 2019. He previously served as Chief Executive Officer and chairman of the board of directors of OncoCell MDx from June 2010 to April 2019. From June 2005 to September 2009, Dr. Stylli was President, Chief Executive Officer, and a member of the board of directors of Sequenom, Inc., a molecular diagnostic testing and genetics analysis company. From December 2003 to February 2005, Dr. Stylli was President and Chief Executive Officer of Xencor, Inc., a biopharmaceutical company. From April 2002 to July 2003, Dr. Stylli served as co-founder, President and Chief Executive Officer of CovX Pharmaceuticals Inc., a biopharmaceutical company. In May 1995, he co-founded Aurora Biosciences Corp., a biotechnology company. From May 1995 to April 2001, when Aurora Biosciences Corp. was acquired by Vertex Pharmaceuticals Incorporated, he held various senior roles at Aurora Biosciences Corp. From April 2001 to June 2002, following the acquisition, Dr. Stylli served as President of Aurora Biosciences Corp. and PanVera Corporation, a biotechnology company. Dr. Stylli received his B.S. from the University of East London, his M.B.A. from Open University in the United Kingdom, and his Ph.D. from London University.

We believe Dr. Stylli is qualified to serve on our Board because of his extensive experience forming and building biotechnology companies.

Jeffrey D. Alter

Mr. Alter has served as a member of our Board since January 2018. From April 2004 to June 2018, Mr. Alter served in various chief leadership positions at UnitedHealthcare, a health plan business, including as Chief

Executive Officer of its commercial group from November 2014 to June 2018, as Chief Executive Officer of its employer and individual business from January 2011 to November 2014, as Chief Executive Officer, Northeast Region from June 2008 to January 2011, as Chief Operating Officer from April 2005 to June 2008, and as Chief Financial Officer, Northeast Region from April 2004 to April 2005. Mr. Alter earned both his B.S. in Marketing and his M.B.A. in Finance from Saint John's University, New York.

We believe Mr. Alter is qualified to serve on our Board because of his extensive leadership experience in the healthcare industry and finance experience.

John T. Bigalke

Mr. Bigalke has served as a member of our Board since January 2019. Mr. Bigalke has served as the Chief Executive Officer of Second Half Healthcare Advisors, a healthcare strategy firm, since its founding by Mr. Bigalke in August 2016. Prior to founding Second Half Healthcare Advisors, he served as Vice Chairman and Senior Partner, Global Health Care Practice at Deloitte USA LLP, an accounting and consulting firm, from April 2012 to August 2016 and as Vice Chairman and National Industry Leader for the Health Care and Life Science Practice at Deloitte USA LLP from June 1998 until April 2012. Mr. Bigalke has served as a member of the board of directors of Premier, Inc., a healthcare improvement company, since October 2019. He has served as a director for AdventHealth, a health system company, since June 2012. He previously served as a member of the board of directors of Deloitte USA, LLP from June 2004 to May 2007. Mr. Bigalke earned his B.S. in Financial Management from Clemson University and his M.B.A. from the University of Central Florida. Mr. Bigalke is a Certified Public Accountant.

We believe Mr. Bigalke is qualified to serve on our Board because of his extensive experience in the healthcare and life sciences industry and his finance and accounting experience.

Jeffrey A. Ferrell

Mr. Ferrell has served as a member of our Board since June 2013. Mr. Ferrell has served as the Managing Partner of Athyrium Capital Management, LP, a life sciences focused investment and advisory company, since November 2008. Mr. Ferrell served as a director of Lpath, Inc. from April 2007 to December 2016. Prior to Lpath, Inc., Mr. Ferrell served in a number of roles at Lehman Brothers, including as Senior Vice President from December 2005 to November 2008 and as Vice President in Lehman Brothers' private equity division from December 2002 to December 2005. From June 1997 to February 2001, Mr. Ferrell was a principal at Schroder Ventures Life Sciences. Mr. Ferrell earned his A.B. in Biochemical Sciences from Harvard University.

We believe Mr. Ferrell is qualified to serve on our Board because of his extensive experience investing in and guiding early stage life sciences companies.

Brian L. Kotzin, M.D.

Dr. Kotzin has served as a member of our Board since August 2019. Dr. Kotzin has served as Senior Vice President, Clinical Development at Nektar Therapeutics, a biopharmaceutical company, since April 2017. Prior to Nektar, Dr. Kotzin was at Amgen Inc., where he served as Vice President, Global Clinical Development and Head, Inflammation Therapeutic Area from July 2004 to January 2015. During his employment at Amgen Inc., he also served as Vice President, Translational Sciences and Head of Medical Sciences from February 2006 to July 2011. Before joining Amgen, Dr. Kotzin was a faculty member in the Division of Rheumatology of the Department of Medicine and Department of Immunology at the University of Colorado Health Sciences Center in Denver, Colorado from September 1981 to July 2004. During this time at the University of Colorado Health Sciences Center, he was also head of Clinical Immunology in the Department of Medicine and director of the Autoimmunity Center of Excellence from July 1998 to July 2004. He has served as a member of the board of directors of Rigel Pharmaceuticals, Inc. since August 2017. Dr. Kotzin earned his medical degree from Stanford University and his B.S. in Mathematics from the University of Southern California.

We believe Dr. Kotzin is qualified to serve on our Board because of his extensive academic research experience in immunology and experience as a senior executive for life sciences companies.

Samuel R. Nussbaum, M.D.

Dr. Nussbaum has served as a member of our Board since January 2019. Dr. Nussbaum has served as a Strategic Consultant for EBG Advisors, the consulting arm for Epstein Becker and Green, since January 2016. Dr. Nussbaum has also served as a Senior Advisor to Sandbox Industries, a venture fund, since January 2017, and Ontario Teachers' Pension Fund since August 2016. From January 2000 until December 2015, Dr. Nussbaum served as Executive Vice President, Clinical Health Policy, and Chief Medical Officer of Anthem, Inc., a health insurance company. He consulted for Anthem from January 2016 to December 2017. Dr. Nussbaum has served as a member of the board of directors of Coherus BioSciences, Inc., a biosimilar company, since May 2018 and Motus GI Holdings, Inc., a medical technology company, since March 2017. Dr. Nussbaum is a Professor of Clinical Medicine at Washington University School of Medicine and an adjunct professor at the Olin School of Business, Washington University and serves as Senior Fellow at the University of Southern California Schaeffer Center for Health Policy and Economics. Dr. Nussbaum earned his B.A. from New York University and his M.D. from Mount Sinai School of Medicine. He trained in internal medicine at Stanford University and Massachusetts General Hospital and in endocrinology at Harvard Medical School and Massachusetts General Hospital.

We believe Dr. Nussbaum is qualified to serve on our Board because of his experience advising life sciences and healthcare companies and his extensive experience as a senior executive and board member in the pharmaceutical and healthcare industries.

Lynne Powell

Ms. Powell has served as a member of our Board since February 2019. Since September 2019 and October 2019, Ms. Powell has served as Chief Executive Officer and as a member of the board of directors, respectively, of Druggability Technologies Holdings Ltd, a specialty pharmaceutical company. Prior to joining Druggability, Ms. Powell served as Senior Vice President and Chief Commercial Officer of BioCryst Pharmaceuticals, Inc., a biotherapeutics company, from January 2015 to July 2019. From January 2010 to October 2014, Ms. Powell served as Senior Vice President of North American Commercial Operations at CSL Behring, a biotherapeutics company. She earned her B.S. in Applied Biology, Pharmacology & Toxicology from the University of East London and her M.B.A. from Monash University (Australia) and Warwick University (UK).

We believe Ms. Powell is qualified to serve on our Board because of her extensive experience as a senior executive and board member in the pharmaceutical industry.

Eric d'Esparbes

Mr. d'Esparbes has served as our Chief Financial Officer since May 2019. From September 2014 to August 2018, Mr. d'Esparbes served as the Chief Financial Officer of Innoviva, Inc., a biotechnology company, where he was responsible for all aspects of the finance function including financial accounting, capital planning, audit, tax, and investor relations. Mr. d'Esparbes also served as the interim Principal Executive Officer of Innoviva from February 2018 to June 2018. Prior to Innoviva, he served as Chief Financial Officer for Joule Unlimited, an energy company, from December 2010 to March 2014, Vice President of Finance for AEI, Inc., a global energy company, from February 2010 to December 2010, Chief Financial Officer of AEI Asia Limited from May 2007 to February 2010, and Chief Financial Officer for Meiya Power Company (now CNG New Energy), an energy company, from October 1999 to May 2007. Mr. d'Esparbes earned his bachelor's degree from Hautes Études Commercial in Montréal, Canada.

Sami Shihabi

Mr. Shihabi has served as our Chief Commercial Officer since October 2019. From January 2018 to October 2019, he served as our Senior Vice President of Marketing and Portfolio Strategy, where he was responsible for

leading the marketing strategies for our women's health business. Previously, Mr. Shihabi was the Vice President, Head of Commercial for Prometheus Laboratories Inc., a diagnostic company, from October 2016 to January 2018, where he was responsible for leading the commercials sales, marketing, and managed care organizations. Also at Prometheus, he served as Executive Director, Global Strategic Marketing from October 2015 to October 2016. Prior to Prometheus, he served as Global Commercial and Marketing Lead at Nestlé Health Science, a health science company, from January 2014 to October 2015. Mr. Shihabi earned his B.S. in Biological Sciences from the University of California, Davis, his master's degree in Molecular Biology from Pennsylvania State University, and his M.B.A. from the University of California Irvine.

Matthew Cooper, Ph.D.

Dr. Cooper has served as our Chief Scientific Officer since March 2015. Previously, Dr. Cooper was the Chief Executive Officer and founder of Carmenta Bioscience, Inc., a biotechnology company, from February 2012 until we acquired Carmenta in March 2015. Prior to Carmenta, he was founding Chief Scientific Officer at Syapse Inc., a precision medicine software platform company, from February 2010 to February 2012. Previously, he served as Head of Non-Clinical Safety Information at Hoffmann-La Roche, a healthcare company, from January 2009 to April 2010 and as Principal Research Scientist at Hoffman-La Roche from February 2006 to January 2009. He was a scientist at Biogen Idec from February 2001 to February 2006. Dr. Cooper earned his B.S. in Chemistry from the University of Tulsa, dual M.B.A.s from Columbia Business School and the Berkeley Haas School of Business, and his Ph.D. in Toxicology from the University of Kentucky College of Medicine.

Clarke Neumann, J.D.

Mr. Neumann has served as our General Counsel and Secretary since September 2014. Previously, Mr. Neumann served as Vice President, Associate General Counsel, and Assistant Secretary of Sequenom, Inc., a molecular diagnostic testing and genetics analysis company, from October 2012 to August 2014, as Vice President and General Counsel and Assistant Secretary from May 2001 to October 2012, and as Corporate Counsel from July 1999 to May 2001. From October 1993 to May 1999, Mr. Neumann was an attorney at Lyon & Lyon, LLP, specializing in intellectual property litigation, strategic counseling, business litigation, and transactional matters. Mr. Neumann earned his B.S. in chemical engineering from Pennsylvania State University and his J.D. from Loyola Law School, Los Angeles.

George Gianakopoulos

Mr. Gianakopoulos has served as our Senior Vice President of Sales since October 2019. He previously served as our Corporate Vice President of Sales from January 2018 to October 2019 and as our Vice President of Sales from September 2014 to January 2018. Prior to joining our company, Mr. Gianakopoulos served as a sales leader in the oncology division of Myriad Genetics, Inc., a diagnostics company, from June 2006 to August 2014. Mr. Gianakopoulos earned his B.S.B.A. and his M.B.A. from Indiana University.

Board Structure

Our business and affairs are managed under the direction of our Board, which currently consists of seven members. Each of our current directors will continue to serve until the election and qualification of his or her successor, or his or her earlier death, resignation or removal.

In accordance with our seventh amended and restated certificate of incorporation and amended and restated bylaws, each to be in effect immediately prior to the completion of this offering, our entire Board will stand for election at each annual meeting of stockholders. Each director will hold office for a one-year term and until the election and qualification of his or her successor. The authorized number of directors is determined from time to time solely by resolution of the Board. Our certificate of incorporation and bylaws provide sole authority to our Board to fill vacancies and any additional directorships resulting from an increase in the authorized number of directors.

Board Leadership Structure

Our Board has designated Dr. Stylli, our Chief Executive Officer, to serve as Chairman of the Board. Combining the roles of Chief Executive Officer and Chairman allows one person to drive strategy and agenda setting at the board level while maintaining responsibility for executing on that strategy as Chief Executive Officer. At the same time, our lead independent director has broad authority and responsibility over board governance and operations.

Although our amended and restated bylaws do not require that we combine the Chief Executive Officer and Chairman positions, our Board believes that having the positions be combined is the appropriate leadership structure for us at this time. Our Board recognizes that, depending on the circumstances, other leadership models, such as separating the roles of Chief Executive Officer and Chairman, might be appropriate. Accordingly, our board of directors may periodically review its leadership structure. Our Board believes its administration of its risk oversight function has not affected its leadership structure.

Our independent directors will meet alone in executive session regularly throughout each year. The purpose of these executive sessions is to promote open and candid discussion among independent directors.

Role of our Board in Risk Oversight

We face a number of risks, including those described under the section titled “Risk Factors” included elsewhere in this prospectus. Our board of directors believes that risk management is an important part of establishing, updating, and executing on the company’s business strategy. Our Board, as a whole and at the committee level, has oversight responsibility relating to risks that could affect the corporate strategy, business objectives, compliance, operations and the financial condition and performance of the company. Our Board focuses its oversight on the most significant risks facing the company and on its processes to identify, prioritize, assess, manage, and mitigate those risks. Our Board and its committees receive regular reports from members of the company’s senior management on areas of material risk to the company, including strategic, operational, financial, legal, and regulatory risks. While our Board has an oversight role, management is principally tasked with direct responsibility for management and assessment of risks and the implementation of processes and controls to mitigate their effects on the company.

Board Committees

Our Board has established an audit committee, or the Audit Committee, a compensation committee, or the Compensation Committee, a nominating and corporate governance committee, or the Nominating/Corporate Governance Committee, a science committee, or the Science Committee, and a special committee, or the Special Committee. We believe that the functioning of these committees complies with the requirements of the Sarbanes-Oxley Act, the rules of Nasdaq, and SEC rules and regulations that will become applicable to us upon the completion of this offering. Each committee has the responsibilities described below.

Audit Committee

The members of our Audit Committee are Messrs. Bigalke and Alter and Ms. Powell, each of whom qualifies as an independent director for audit committee purposes, as defined under the rules of the SEC and the applicable Nasdaq listing rules and has sufficient knowledge in financial and auditing matters to serve on the audit committee. Mr. Bigalke chairs the Audit Committee. Additionally, Mr. Bigalke qualifies as an “audit committee financial expert” as that term is defined in the rules and regulations established by the SEC.

The primary responsibilities of our Audit Committee are to oversee our accounting and financial reporting processes, including the audits of the financial statements, and the internal and external audit processes. The Audit Committee also oversees the system of internal control established by management and our compliance with legal and regulatory requirements. The Audit Committee oversees the independent auditors, including their independence and objectivity. The Audit Committee is empowered to retain outside legal counsel and other

advisors as it deems necessary or appropriate to assist it in fulfilling its responsibilities, and to approve the fees and other retention terms of the advisors.

Compensation Committee

The members of our Compensation Committee are Messrs. Alter and Ferrell and Dr. Kotzin, each of whom qualifies as an independent director, as defined under applicable Nasdaq qualification standards, and also meets the additional, heightened independence criteria applicable to members of the Compensation Committee. Mr. Alter chairs the Compensation Committee.

The primary responsibilities of our Compensation Committee are to periodically review and approve the compensation and other benefits for our senior officers and directors. This includes reviewing and approving corporate goals and objectives relevant to the compensation of our senior officers, evaluating the performance of these officers in light of the goals and objectives, and setting the officers' compensation. Our Compensation Committee also administers and makes recommendations to the Board regarding equity incentive plans that are subject to the Board's approval and approve the grant of equity awards under the plans.

Nominating/Corporate Governance Committee

The members of our Nominating/Corporate Governance Committee are Dr. Nussbaum and Messrs. Bigalke and Ferrell, each of whom qualifies as an independent director, as defined under applicable Nasdaq qualification standards. Dr. Nussbaum chairs the Nominating/Corporate Governance Committee.

The Nominating/Corporate Governance Committee is responsible for engaging in succession planning for the Board, developing and recommending to the Board criteria for identifying and evaluating qualified director candidates, and making recommendations to the Board regarding candidates for election or reelection to the Board at each annual stockholders' meeting. In addition, the Nominating/Corporate Governance Committee is responsible for overseeing our corporate governance practices and making recommendations to the Board concerning corporate governance matters. The Nominating/Corporate Governance Committee is also responsible for making recommendations to the Board concerning the structure, composition, and functioning of the Board and its committees.

Science Committee

The members of our Science Committee are Dr. Kotzin, Dr. Nussbaum, and Ms. Powell. Dr. Kotzin chairs the Science Committee. The Science Committee is responsible for assisting our Board in ensuring that our research and development organization is optimized to support our strategic goals, and reviewing and monitoring the science, technology, processes, procedures, and infrastructure underlying our major discovery and development programs.

Special Committee

The members of our Special Committee are Mr. Bigalke, Dr. Nussbaum, and Ms. Powell. Mr. Bigalke chairs the Special Committee. The Special Committee is responsible for evaluating, overseeing, making decisions, and taking actions for and on behalf of the company with respect to the pending government investigations and any related proceedings.

Code of Conduct and Ethics

Our Board will adopt a Code of Conduct and Ethics that establishes the standards of ethical conduct applicable to all our directors, officers, and employees. It will address, among other matters, compliance with laws and policies, conflicts of interest, corporate opportunities, regulatory reporting, external communications, confidentiality requirements, insider trading, proper use of assets, and how to report compliance concerns. We intend to disclose any amendments to the Code of Conduct and Ethics, or any waivers of its requirements, on our website to the extent required by applicable rules. The Audit Committee is responsible for applying and interpreting our Code of Conduct and Ethics in situations where questions are presented to it.

Compensation Committee Interlocks

None of the members of our Compensation Committee has at any time during the prior three years been one of our officers or employees. None of our executive officers currently serves, or in the past fiscal year has served, as a member of our Board or Compensation Committee of any entity that has one or more executive officers serving on our Board or Compensation Committee.

Director Independence

In connection with this offering and our planned listing on Nasdaq, our Board has reviewed the independence of all directors in light of each director's (or any family member's, if applicable) affiliations with the company and members of management, as well as significant holdings of our securities. The Board uses the definition of independence under Nasdaq listing standards to assess independence of our directors. These rules establish objective tests and a subjective test for determining who is an "independent director." The subjective test states that an independent director must be a person who lacks a relationship that, in the opinion of the Board, would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. The Board has not established categorical standards or guidelines to make these subjective determinations, but considers all relevant facts and circumstances. After considering the foregoing factors, our Board has determined that Messrs. Alter, Bigalke, Ferrell, Nussbaum, Dr. Kotzin, and Ms. Powell qualify as "independent directors" as defined by Nasdaq rules. Dr. Stylli is not deemed to be independent under Nasdaq rules by virtue of his employment with the company.

Following the effectiveness of this registration statement, the members of our Audit Committee must satisfy the independence criteria set forth in Rule 10A-3 under the Exchange Act, or Rule 10A-3. In order to be considered independent for purposes of Rule 10A-3, no member of the Audit Committee may, other than in his or her capacity as a member of the Audit Committee, the Board or any other committee of the Board: (i) accept, directly or indirectly, any consulting, advisory or other compensatory fee from us or any of our subsidiaries; or (ii) directly, or indirectly through one or more intermediaries, control, be controlled by or be under common control with us or any of our subsidiaries.

Director Compensation

Directors who are also employees, such as Dr. Stylli, did not and do not receive any compensation for their services as our directors. The compensation received by Dr. Stylli for his services to us as our chief executive officer is presented in the 2019 Summary Compensation Table in "Executive Compensation" below. We have reimbursed and will continue to reimburse directors for their reasonable out-of-pocket expenses, including travel, food, and lodging, incurred in attending meetings of our Board and/or its committees. We do not expect to compensate our employee directors for their service on our board of directors in the future.

Outside Director Compensation Policy

In September 2018, we adopted a policy for compensating our non-employee directors with a combination of cash and equity, which became effective on January 1, 2019, with such equity awards being subject to the terms and conditions of the company's Second Amended and Restated 2018 Equity Incentive Plan, Second Amended and Restated 2018 Equity Incentive Plan Restricted Stock Unit Agreement, Second Amended and Restated 2018 Equity Incentive Plan Stock Option Agreement, and related forms of grant notices approved by the Board.

Cash Compensation. All non-employee directors are entitled to receive a $50,000 annual cash retainer for serving as a member of the board of directors as well as the following additional annual cash retainers for their board committee service:

	Chair	Member
Audit Committee	$20,000	$ 8,000
Compensation Committee	$15,000	$ 6,000
Nominating/Corporate Governance Committee	$10,000	$ 5,000
Science Committee	$15,000	$ 6,000
Special Committee	$20,000	$12,000

Each annual cash retainer and additional annual fee is paid quarterly in advance on a prorated basis except for the special committee fees, which are paid once per year.

Fiscal Year 2019 Outside Director Compensation Table

Name	Fees Earned or Paid in Cash ($)	Stock Awards ($)(1)	Option Awards ($)(1)	Total ($)
Jeffrey D. Alter				
John T. Bigalke				
Jeffrey A. Ferrell(2)				
Brian L. Kotzin, M.D.				
Samuel R. Nussbaum, M.D.				
Lynne Powell				

(1) Amounts shown in this column represent the aggregate grant date fair value (calculated in accordance with Financial Accounting Standards Board Accounting Standards Codification Topic 718) of stock awards and stock options granted during the year. A description of the methodologies and assumptions we use to value equity awards and the manner in which we recognize the related expense are described in Note 9 to our consolidated financial statements, Stock-Based Compensation. These amounts may not correspond to the actual value eventually realized by each director because the value depends on the market value of our common stock at the time the award vests or is exercised.

(2) Mr. Ferrell elected not to receive any compensation from us for his services in 2019.

Indemnification Agreements

We have entered into indemnification agreements with our officers and directors. The indemnification agreements and our seventh amended and restated certificate of incorporation to be in effect immediately prior to the completion of this offering will require us to indemnify these individuals to the fullest extent permitted by Delaware law.

EXECUTIVE COMPENSATION

Our named executive officers, or NEOs, for 2019, which consist of our principal executive officer and the next two most highly-compensated executives, are:

- Dr. Harry Stylli, our Chief Executive Officer, or CEO, and Chairman of our Board;
- , our ; and
- , our .

2019 Summary Compensation Table

The following table summarizes the compensation awarded to, earned by, or paid to our NEOs for 2019.

Name and Principal Position	Year	Salary ($)	Bonus ($)	Stock Awards ($)(1)	Option Awards ($)(1)	Non-Equity Incentive Plan Compensation ($)	Nonqualified Deferred Compensation Earnings ($)	All Other Compensation ($)	Total ($)
Harry Stylli, *CEO and Chairman of the Board*	2019								
	2019								
	2019								

(1) Amounts shown in this column represent the aggregate grant date fair value (calculated in accordance with Financial Accounting Standards Board Accounting Standards Codification Topic 718) of stock awards and stock options granted during the year. A description of the methodologies and assumptions we use to value equity awards and the manner in which we recognize the related expense are described in Note 9 to our consolidated financial statements, Stock-Based Compensation. These amounts may not correspond to the actual value eventually realized by each NEO because the value depends on the market value of our common stock at the time the award vests or is exercised.

Outstanding Equity Awards at 2019 Fiscal-Year End

The following table sets forth information regarding outstanding equity awards at the end of 2019 for each of our NEOs.

	Option Awards					Stock Awards			
Name	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#)	Option Exercise Price ($)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)	Market Value of Shares or Units of Stock That Have Not Vested ($)	Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#)	Equity Incentive Plan Awards: Market or Payout Value Of Unearned Shares, Units or Other Rights That Have Not Vested ($)
Harry Stylli, Ph.D.									

Employment Agreements

We do not currently have employment agreements with any of our NEOs but intend to enter into such arrangements in the near future.

Post-Employment Compensation and Change in Control Payments and Benefits

In December 2019, our Board adopted the Progenity, Inc. Severance Plan, or the Severance Plan, pursuant to which certain senior employees, including our NEOs, may become eligible to receive compensation and benefits upon certain qualifying terminations of employment. In the event that an NEO is terminated by the company without cause or voluntarily terminates employment with good reason (with "cause" and "good reason" each as defined in the Severance Plan), in either case more than three months prior to or 13 months following a change in control (as defined in the Severance Plan), subject to execution of a general release of claims in favor of the company and compliance with certain restrictive covenants, the NEO is entitled to receive: (i) continued payment of base salary (for a period of 12 months, in the case of our CEO, and for a period of 9 months, in the case of the other NEOs); and (ii) payment of the before-tax cost of the NEO's premiums to continue coverage, or the Continued Coverage, for the NEO and the NEO's eligible dependents, if any, under the company's health, vision and/or dental benefit plans to the extent such NEO (and eligible dependents, if applicable) were enrolled prior to such termination (for a period of 12 months, in the case of our CEO and for a period of 9 months, in the case of the other NEOs). In the event that an NEO is terminated by the company without cause or voluntarily terminates employment with good reason, in either case within the period that is three months prior to or 13 months following a change in control, subject to execution of a general release of claims in favor of the company, the NEO is entitled to receive: (i) a lump sum payment within 30 days of the change in control equal to 24 months of base salary for the CEO and 18 months of base salary for the other NEOs; (ii) a lump sum payment within 30 days of the change in control equal to the NEO's average cash incentive bonus earned for the two most recently completed fiscal years multiplied by 2, in the case of the CEO and by 1.5, in the case of the other NEOs; (iii) the Continued Coverage for a period of 24 months, in the case of the CEO and 18 months, in the case of the other NEOs; and (iv) all unvested time-based equity awards will accelerate in full and all unvested performance-based equity awards that are outstanding as of the termination date will vest, if at all, based on actual performance for the portion of the performance period ending shortly prior to the occurrence of the change in control as if such partial performance period were the entire performance period.

Employee Benefit Plans

Equity Plans

We currently maintain our 2018 Plan, our 2011 Incentive Stock Plan, or the 2011 Plan, and our Second Amended and Restated 2012 Stock Plan, or the 2012 Plan, pursuant to which we have granted equity awards to our NEOs and certain of our other employees, and our 2015 Consultant Stock Plan, or the 2015 Plan, pursuant to which we have granted equity awards to certain eligible consultants.

2018 Plan

Purpose. The 2018 Plan, which is the successor to and continuation of the 2012 Plan and 2015 Plan, is intended to help the company secure and retain the services of eligible award recipients, provide incentives for such persons to exert maximum efforts for the success of the company and its affiliates and provide a means by which the eligible recipients may benefit from increases in the value of our common stock.

Eligibility. Awards may be granted to employees, including officers, non-employee directors, and consultants of the company and its affiliates. Only our employees and those of our affiliates are eligible to receive incentive stock options.

Types of Awards. The 2018 Plan provides for the grant of incentive stock options within the meaning of Section 422 of the Code, nonstatutory stock options, stock appreciation rights, restricted stock awards, restricted stock unit awards, performance stock awards, performance cash awards, and other stock awards.

Authorized Shares. Subject to adjustment for certain dilutive or related events, the aggregate maximum number of shares of our common stock that may be issued pursuant to stock awards under the 2018 Plan, or the Share Reserve, is 16,650,000 shares of common stock. From and after the effective date of the completion of this offering, the Share Reserve will automatically increase on January 1st of each year during the term of the 2018 Plan commencing on January 1st of the year following the year in which this offering is completed in an amount equal to 2% of the total number of shares of capital stock outstanding on December 31st of the preceding calendar year; provided, however, that the Board may provide that there will not be a January 1st increase in the Share Reserve in a given year or that the increase will be less than 2% of the shares of capital stock outstanding on the preceding December 31st.

The Share Reserve will not be reduced if an award or any portion thereof (i) expires, is canceled, is forfeited or otherwise terminates without all of the shares covered by such award having been issued or (ii) is settled in cash. If any shares of common stock issued under an award are forfeited back to or repurchased by the company, such shares will revert to and again be made available for issuance under the 2018 Plan. Any shares retained or reacquired by the company in satisfaction of tax withholding obligations, as consideration for the exercise or purchase price of an award, or with the proceeds paid by the participant under the terms of a stock award, will also again become available for issuance under the 2018 Plan. If the company repurchases shares of common stock with stock option exercise or stock purchase proceeds, such shares will be added to the Share Reserve. For any stock award with respect to which a net number of shares of common stock are issued, whether in satisfaction of tax withholding obligations, exercise or purchase prices or otherwise, only the net number of shares will reduce the Share Reserve.

The aggregate maximum number of shares of common stock that may be issued on the exercise of incentive stock options is 16,650,000.

The aggregate dollar value of stock awards (based on the grant date fair value of such awards) granted under the 2018 Plan during any calendar year to any one non-employee director may not exceed $750,000.

Shares issued under the 2018 Plan may consist of authorized but unissued or reacquired common stock of the company, including shares repurchased by the company on the open market or otherwise or shares classified as treasury shares.

Plan Administration. Our Board has the authority to administer the 2018 Plan, including the powers to: (i) determine who will be granted awards and what type of award, when and how each award will be granted, the provisions of each award (which need not be identical), the number of shares or cash value subject to an award and the fair market value applicable to an award; (ii) construe and interpret the 2018 Plan and awards granted thereunder and establish, amend and revoke rules and regulations for administration of the 2018 Plan and awards, including the ability to correct any defect, omission or inconsistency in the 2018 Plan or any award document; (iii) settle all controversies regarding the 2018 Plan and awards granted thereunder; (iv) accelerate or extend, in whole or in part, the time during which an award may be exercised or vested or at which cash or shares may be issued; (v) suspend or terminate the 2018 Plan; (vi) amend the 2018 Plan; (vii) submit any amendment to the 2018 Plan for stockholder approval; (viii) approve forms of award documents for use under the 2018 Plan and to amend the terms of any one or more outstanding awards; (ix) generally exercise such powers and perform such acts as the Board may deem necessary or expedient to promote the best interests of the company and that are not in conflict with the provisions of the 2018 Plan or any award documents; and (x) adopt procedures and sub-plans as are necessary or appropriate.

Subject to the provisions of the 2018 Plan, our Board may delegate all or some of the administration of the 2018 Plan to a committee of one or more directors and may delegate to one or more officers the authority to designate employees who are not officers to be recipients of options and stock appreciation rights (and, to the extent permitted by applicable law, other stock awards) and, to the extent permitted by applicable law, to determine the terms of such awards and the number of shares of common stock to be subject to such stock awards granted to

such employees. Unless otherwise provided by the Board, delegation of authority by the Board to a committee or an officer will not limit the authority of the Board. All determinations, interpretations and constructions made by the Board (or another authorized committee or officer exercising powers delegated by the Board) in good faith will be final, binding and conclusive on all persons. Pursuant to the provisions of the 2018 Plan, the Board has delegated administration of the 2018 Plan to the Compensation Committee.

Stock Options. A stock option may be granted as an incentive stock option or a nonqualified stock option. The option exercise price may not be less than the fair market value of the stock subject to the option on the date the option is granted or, with respect to incentive stock options, less than 110% of the fair market value if the recipient owns stock possessing more than 10% of the total combined voting power of all classes of stock of the company or any affiliate, or a Ten Percent Stockholder, unless the option was granted pursuant to an assumption or substitution for another option in a manner satisfying the provisions of Section 409A and, if applicable, Section 424(a) of the Code. Options will not be exercisable after the expiration of ten years from the date of grant (or five years, in the case of an incentive stock option issued to a Ten Percent Stockholder). Each award agreement will set forth the number of shares subject to each option. The purchase price of any shares acquired pursuant to an option may be payable in cash, check, bank draft, money order, net exercise or as otherwise determined by the Board and set forth in the award agreement, including through an irrevocable commitment by a broker to pay over such amount from a sale of the shares issuable under the option and the delivery of previously owned shares. The vesting schedule applicable to any option, including any performance conditions, will be as set forth in the award agreement.

Stock Appreciation Rights. A stock appreciation right, or SAR, is a right that entitles the participant to receive, in cash or shares of stock or a combination thereof, as determined by the Board, value equal to or otherwise based on the excess of (i) the fair market value of a specified number of shares at the time of exercise over (ii) the exercise price of the right, as established by the Board on the date of grant. Upon exercising a SAR, the participant is entitled to receive the amount by which the fair market value of the stock at the time of exercise exceeds the exercise price of the SAR. The exercise price of each SAR may not be less than the fair market value of the stock subject to the award on the date the SAR is granted, unless the SAR was granted pursuant to an assumption of or substitution for another option in a manner satisfying the provisions of Section 409A of the Code. SARs will not be exercisable after the expiration of ten years from the date of grant. Each award agreement will set forth the number of shares subject to the SAR. The vesting schedule applicable to any SAR, including any performance conditions, will be as set forth in the award agreement.

Provisions Applicable to Both Options and SARs

Transferability. The Board may, in its sole discretion, impose limitations on the transferability of options and SARs. Unless the Board provides otherwise, an option or SAR will not be transferable except by will or the laws of descent and distribution and will be exercisable during the lifetime of a participant only by such participant. The Board may permit transfer of an option or SAR in a manner not prohibited by applicable law. Subject to approval by the Board, an option or SAR may be transferred pursuant to the terms of a domestic relations order or similar instrument or pursuant to a beneficiary designation.

Termination of Service. Except as otherwise provided in an applicable award document or other agreement between a participant and the company or any affiliate, upon a termination for any reason other than for cause or due to death or disability, a participant may exercise his or her option or SAR (to the extent such award was exercisable as of the date of termination) for a period of three months following the termination date or, if earlier, until the expiration of the term of such award. Upon a termination due to a participant's disability, unless otherwise provided in an applicable award or other agreement, the participant may exercise his or her option or SAR (to the extent that such award was exercisable as of the date of termination) for a period of twelve (12) months following the termination date or, if earlier, until the expiration of the term of such award. Upon a termination due to a participant's death, unless otherwise provided in an applicable award or other agreement, the participant's estate may exercise the option or SAR (to the extent such award was exercisable as of the

termination date) for a period of eighteen (18) months following the termination date or, if earlier, until the expiration of the term of such award. Unless provided otherwise in an award or other agreement, an option or SAR will terminate on the date that a participant is terminated for cause and the participant will not be permitted to exercise such award.

Awards Other Than Options and SARs

Restricted Stock and Restricted Stock Units. Restricted shares are awards of shares, the grant, issuance, retention, vesting and/or transferability of which is subject during specified periods of time to such conditions (including continued employment) and terms as the Board deems appropriate. Restricted stock units, or RSUs, are an award denominated in units under which the issuance of shares (or cash payment in lieu thereof) is subject to such conditions (including continued employment) and terms as the Board deems appropriate. Each award document evidencing a grant of restricted stock or RSUs will set forth the terms and conditions of each award, including vesting and forfeiture provisions, transferability and, if applicable, right to receive dividends or dividend equivalents.

Performance Awards. A performance award is a stock or cash award that is payable contingent upon the attainment during a performance period of certain performance goals. A performance award may, but need not, require the completion of a specified period of service. The length of any performance period, the applicable performance goals, and the measurement of whether and to what degree such performance goals have been attained will be as determined by the Compensation Committee or the Board. The Compensation Committee or the Board retains the discretion to reduce or eliminate the compensation or economic benefit upon the attainment of any performance goals and to define the manner of calculating the performance criteria it selects to use for a performance period.

Other Stock Awards. The 2018 Plan permits the grant of other forms of stock awards valued in whole or in part by reference to, or otherwise based on, the common stock of the company, including the appreciation in value thereof. Subject to the provisions of the 2018 Plan, the Board has the sole and complete authority to determine the persons to whom and the times at which such other stock awards may be granted and other provisions related thereto.

Certain Adjustments. In the event of any change in the capitalization of the company, the Board will appropriately and proportionately adjust: (i) the class(es) and maximum number of securities subject to the 2018 Plan; (ii) the class(es) and maximum number of securities that may be issued pursuant to the exercise of incentive stock options; and (iii) the class(es) and number of securities or other property and value (including price per share of stock) subject to outstanding stock awards. The Board will make such adjustments, and its determination will be final, binding, and conclusive. Unless provided otherwise in an award or other agreement, in the event of a dissolution or liquidation of the company, all outstanding stock awards (other than stock awards consisting of vested and outstanding shares of company common stock not subject to a forfeiture condition or the company's right of repurchase) will terminate immediately prior to the completion of such dissolution or liquidation, and the shares of common stock subject to the company's repurchase rights or subject to forfeiture may be repurchased or reacquired by the company notwithstanding the fact that the holder of such stock award is providing continuous service; provided, however, that the Board may, in its sole discretion, provide that some or all stock awards will become fully vested, exercisable and/or no longer subject to repurchase or forfeiture (to the extent not already expired or terminated) before the dissolution or liquidation is completed but contingent upon its completion.

Corporate Transaction. Unless provided otherwise in an award agreement or other agreement between a participant and the company or an affiliate, in the event of a Corporate Transaction (as defined in the 2018 Plan), the Board will take one or more of the following actions with respect to each outstanding award, contingent upon the closing or completion of the Corporate Transaction:

(i) arrange for the surviving corporation or acquiring corporation (or the surviving or acquiring corporation's parent company) to assume or continue the award or to substitute a similar stock

award for the award (including, but not limited to, an award to acquire the same consideration per share paid to the stockholders of the company pursuant to the Corporate Transaction);

(ii) arrange for the assignment of any reacquisition or repurchase rights held by the company in respect of common stock issued pursuant to the award to the surviving corporation or acquiring corporation (or the surviving or acquiring corporation's parent company);

(iii) accelerate the vesting, in whole or in part, of the award (and, if applicable, the time at which the award may be exercised) to a date prior to the effective time of such Corporate Transaction as determined by the Board, with such award terminating if not exercised (if applicable) at or prior to the effective time of the Corporate Transaction, and with such accelerated vesting (and if applicable, such exercise) reversed if the Corporate Transaction does not become effective;

(iv) arrange for the lapse, in whole or in part, of any reacquisition or repurchase rights held by the company with respect to the award;

(v) cancel or arrange for the cancellation of the award, to the extent not vested or not exercised prior to the effective time of the Corporate Transaction, in exchange for such cash consideration, if any, as the Board, in its reasonable determination, may consider appropriate as an approximation of the value of the canceled award;

(vi) cancel or arrange for the cancellation of the award, to the extent not vested or not exercised prior to the effective time of the Corporate Transaction, in exchange for a payment equal to the excess, if any, of (A) the value in the Corporate Transaction of the property the participant would have received upon the exercise of the award immediately prior to the effective time of the Corporate Transaction, over (B) any exercise price payable by such holder in connection with such exercise; and

(vii) continuation of the award.

The Board need not take the same action or actions with respect to all awards or portions thereof or with respect to all participants and may take different actions with respect to the vested and unvested portions of an award.

In the absence of any affirmative determination by the Board at the time of a Corporate Transaction, each outstanding award will be assumed or an equivalent award will be substituted by such successor corporation or a parent or subsidiary of such successor corporation, referred to as a Successor Corporation, unless the Successor Corporation does not agree to assume the award or to substitute an equivalent award, in which case the vesting of such award will accelerate in its entirety (along with, if applicable, the time at which the award may be exercised) to a date prior to the effective time of such Corporate Transaction as the Board will determine (or, if the Board does not determine such a date, to the date that is five days prior to the effective date of the Corporate Transaction), with such award terminating if not exercised (if applicable) at or prior to the effective time of the Corporate Transaction, and with such exercise reversed if the Corporate Transaction does not become effective.

Change in Control. An award may be subject to additional acceleration of vesting and exercisability upon or after a Change in Control (as defined in the 2018 Plan) as may be provided in the award agreement for such award or as may be provided in any other written agreement between the company or any affiliate and the participant, but in the absence of such provision, no such acceleration will occur.

Termination and Amendment. The Board may suspend or terminate the 2018 Plan at any time. No awards will be granted after the tenth (10th) anniversary of the date the Board adopted the 2018 Plan. No awards may be granted under the 2018 Plan while the 2018 Plan is suspended or after it is terminated.

2015 Plan

Purpose. The 2015 Plan was adopted to advance the interests of the company and our stockholders by providing an incentive to attract, retain, and reward individual consultants performing services for us and by motivating such persons to contribute to our growth and profitability.

Eligibility. The 2015 Plan allowed for awards to be granted to consultants who qualified as accredited investors at the time of grant.

Authorized Shares. The 2015 Plan ceased to be available for the grant of awards upon the effective date of the 2018 Plan. As of , 2020, options to purchase shares of our common stock remained outstanding under the 2015 Plan and the terms of the 2015 Plan will continue to govern the outstanding awards.

Plan Administration. Our Board or a committee thereof appointed by the Board has the authority to administer the 2015 Plan, including the powers to: (i) determine the persons to whom, and the time or times at which, awards would be granted and the number of shares of common stock subject to such awards, (ii) determine the types of awards granted, (iii) determine the fair market value of our common stock, (iv) determine the terms, conditions and restrictions applicable to each award (which need not be identical) and any shares acquired pursuant thereto, including, without limitation, (a) the exercise or purchase price of shares pursuant to any award, (b) the method of payment for shares purchased pursuant to any award, (c) the method for satisfaction of any tax withholding obligation arising in connection with any award or shares acquired pursuant thereto, including by the withholding or delivery of shares of common stock, (d) the timing, terms and conditions of the exercisability or vesting of any award or shares acquired pursuant thereto, (e) the time of expiration of any award, (f) the effect of any participant's termination of service on any of the foregoing, and (g) all other terms, conditions and restrictions applicable to any award or shares acquired pursuant thereto not inconsistent with the terms of the 2015 Plan, (v) approve forms of award agreements, (vi) amend, modify, extend, cancel or renew any award or waive any restrictions or conditions applicable to any award or any shares acquired pursuant thereto, (vii) accelerate, continue, extend or defer the exercisability or vesting of any award or any shares acquired pursuant thereto, including with respect to the period following a participant's termination of service, (viii) prescribe, amend or rescind rules, guidelines and policies relating to the 2015 Plan, or adopt sub-plans or supplements to, or alternate versions of, the 2015 Plan as deemed necessary or desirable to comply with laws, tax policies, accounting principles or customs of foreign jurisdictions, and (ix) correct any defect, supply any omission or reconcile any inconsistency in the 2015 Plan or any award agreement and to make all other determinations and take such other actions with respect to the plan and outstanding awards as deemed advisable to the extent not inconsistent with the terms of the 2015 Plan or applicable law.

Stock Options. A stock option may be granted only as a nonqualified stock option. The option exercise price may not be less than the fair market value of the stock subject to the option on the date the option is granted, unless the option was granted pursuant to an assumption or substitution for another option in a manner qualifying under Section 409A of the Code. Options will not be exercisable after the expiration of ten years from the date of grant. Each award agreement sets forth the number of shares subject to each option. The purchase price of any shares acquired pursuant to an option may be payable in cash, check or cash equivalent, cashless exercise, net exercise or as otherwise determined by the Board and set forth in the award agreement, including through an irrevocable commitment by a broker to pay over such amount from a sale of the shares issuable under the option and the delivery of previously owned shares. The vesting schedule applicable to any option is as set forth in the award agreement.

Transferability. Unless otherwise provided in an award agreement, during the lifetime of the participant, an option will only be exercisable by the participant or his or her guardian or legal representative. An option may not be subject to anticipation, alienation, sale, exchange, transfer, assignment, pledge, encumbrance, or garnishment, except by transfer by will or the laws of descent and distribution.

Certain Adjustments. In the event of certain changes in the capitalization of the company, the Board will make appropriate and proportionate adjustments, including to outstanding awards and any applicable exercise price in order to prevent dilution or enlargement of participants' rights.

Change in Control. Subject to the requirements and limitations of Section 409A of the Code, if applicable, the Board may provide for any one or more of the following upon a Change in Control (as defined in the 2015 Plan):

(i) accelerated vesting of outstanding awards, (ii) assumption, continuation or substitution of outstanding awards and/or (iii) cash-out of outstanding awards.

Termination and Amendment. The Board may amend, suspend, or terminate the 2015 Plan at any time, subject to stockholder approval, if applicable in the case of certain amendments. As of the effectiveness of the 2018 Plan, no awards have been or will be granted under the 2015 Plan but outstanding awards will continue to be governed by their terms.

2012 Plan

Purpose. The 2012 Plan was adopted to advance the interests of the company and our stockholders by providing an incentive to attract, retain, and reward persons performing services for us and by motivating such persons to contribute to our growth and profitability.

Eligibility. The 2012 Plan allowed for awards to be granted to employees, consultants and non-employee directors.

Authorized Shares. The 2012 Plan ceased to be available for the grant of awards upon the effective date of the 2018 Plan. As of , 2020, options to purchase shares of our common stock remained outstanding under the 2012 Plan and the terms of the 2012 Plan will continue to govern the outstanding awards.

Plan Administration. Our Board or a committee thereof appointed by the Board has the authority to administer the 2012 Plan, including the powers to: (i) determine the persons to whom, and the time or times at which, awards would be granted and the number of shares of common stock subject to such awards, (ii) determine the types of awards granted, (iii) determine the fair market value of our common stock, (iv) determine the terms, conditions and restrictions applicable to each award (which need not be identical) and any shares acquired pursuant thereto, including, without limitation, (a) the exercise or purchase price of shares pursuant to any award, (b) the method of payment for shares purchased pursuant to any award, (c) the method for satisfaction of any tax withholding obligation arising in connection with any award or shares acquired pursuant thereto, including by the withholding or delivery of shares of common stock, (d) the timing, terms and conditions of the exercisability or vesting of any award or shares acquired pursuant thereto, (e) the time of expiration of any award, (f) the effect of any participant's termination of service on any of the foregoing, and (g) all other terms, conditions and restrictions applicable to any award or shares acquired pursuant thereto not inconsistent with the terms of the 2012 Plan, (v) approve forms of award agreements, (vi) amend, modify, extend, cancel or renew any award or waive any restrictions or conditions applicable to any award or any shares acquired pursuant thereto, (vii) accelerate, continue, extend or defer the exercisability or vesting of any award or any shares acquired pursuant thereto, including with respect to the period following a participant's termination of service, (viii) prescribe, amend or rescind rules, guidelines and policies relating to the 2012 Plan, or adopt sub-plans or supplements to, or alternate versions of, the 2012 Plan as deemed necessary or desirable to comply with laws, tax policies, accounting principles or customs of foreign jurisdictions, and (ix) correct any defect, supply any omission or reconcile any inconsistency in the 2012 Plan or any award agreement and to make all other determinations and take such other actions with respect to the plan and outstanding awards as deemed advisable to the extent not inconsistent with the terms of the 2012 Plan or applicable law.

Stock Options. A stock option may be granted as an incentive stock option or a nonqualified stock option. The option exercise price may not be less than the fair market value of the stock subject to the option on the date the option is granted or, with respect to incentive stock options, less than 110% of the fair market value if the recipient is a Ten Percent Stockholder, unless the option was granted pursuant to an assumption or substitution for another option in a manner qualifying under Section 424(a) of the Code. Options will not be exercisable after the expiration of ten years from the date of grant (or five years, in the case of an incentive stock option issued to a Ten Percent Stockholder). Each award agreement sets forth the number of shares subject to each option. The purchase price of any shares acquired pursuant to an option may be payable in cash, check or cash equivalent,

cashless exercise, net exercise or as otherwise determined by the Board and set forth in the award agreement, including through an irrevocable commitment by a broker to pay over such amount from a sale of the shares issuable under the option and the delivery of previously owned shares. The vesting schedule applicable to any option is as set forth in the award agreement.

Transferability. During the lifetime of the participant, an option will only be exercisable by the participant or his or her guardian or legal representative. An option may not be subject to anticipation, alienation, sale, exchange, transfer, assignment, pledge, encumbrance, or garnishment, except by transfer by will or the laws of descent and distribution. Notwithstanding the foregoing, the administrator, in its discretion, may provide that nonstatutory stock options may be assigned or transferred subject to certain limitations.

Certain Adjustments. In the event of certain changes in the capitalization of the company, the Board will make appropriate and proportionate adjustments, including to outstanding awards and any applicable exercise price in order to prevent dilution or enlargement of participants' rights.

Change in Control. Subject to the requirements and limitations of Section 409A of the Code, if applicable, the Board may provide for any one or more of the following upon a Change in Control (as defined in the 2012 Plan): (i) accelerated vesting of outstanding awards, (ii) assumption, continuation or substitution of outstanding awards and/or (iii) cash-out of outstanding awards.

Termination and Amendment. The Board may amend, suspend, or terminate the 2012 Plan at any time, subject to stockholder approval, if applicable in the case of certain amendments. As of the effectiveness of the 2018 Plan, no awards have been or will be granted under the 2012 Plan but outstanding awards will continue to be governed by their terms.

2011 Plan

We ceased granting awards under the 2011 Plan following the adoption of the 2012 Plan. As of , 2020, options to purchase shares of our common stock remained outstanding under the 2011 Plan and the terms of the 2011 Plan, which are generally comparable to the terms under the 2012 Plan, will continue to govern the outstanding awards.

401(k) Plan

We offer our eligible full-time employees, including our NEOs, the opportunity to participate in our tax-qualified 401(k) plan. Employees can contribute 1% to 85% of their eligible earnings up to the Internal Revenue Service's annual limits on a before-tax basis. We provide a match of 60% of the first 10% contributed. The matches we provided to our NEOs in 2019 are reflected in the "All Other Compensation" column of the 2019 Summary Compensation Table above. The matching funds that we provide are 100% vested after the completion of one year of service.

Avero Diagnostics offers eligible full-time employees the opportunity to participate in its tax-qualified 401(k) plan. Employees can contribute 1% to 90% of their eligible earnings up to the Internal Revenue Service's annual limits on a before-tax basis. Avero Diagnostics provides a match of 60% of the first 10% contributed. Avero Diagnostics funds are 100% vested after the completion of one year of service.

Other Retirement Benefits

We do not maintain any defined benefit pension plans or any nonqualified deferred compensation plans.

PRINCIPAL STOCKHOLDERS

The following table presents information regarding beneficial ownership of our equity interests as of , 2020 by:

- each stockholder or group of stockholders known by us to be the beneficial owner of more than 5% of our outstanding equity interests, or our 5% and Greater Stockholders;
- each of our directors;
- our NEOs; and
- all of our directors and executive officers as a group.

Beneficial ownership is determined in accordance with the rules of the SEC, and thus represents voting or investment power with respect to our securities as of , 2020. Under such rules, beneficial ownership includes any shares over which the individual has sole or shared voting power or investment power as well as any shares that the individual has the right to acquire within 60 days after , 2020 through the exercise of any stock option, warrants or other rights. Unless otherwise indicated below, to our knowledge and subject to applicable community property rules, the persons and entities named in the table have sole voting and sole investment power with respect to all equity interests beneficially owned, subject to community property laws where applicable. Unless otherwise indicated, the address of each individual listed in this table is 4330 La Jolla Village Drive, Suite 200, San Diego, CA 92122.

The percentage ownership information shown in the column titled "Shares Beneficially Owned Prior to the Offering" in the table below is based on shares of our common stock outstanding as of , 2020, assuming the automatic conversion of all outstanding shares of our preferred stock into an aggregate of shares of common stock. The percentage ownership information shown in the column titled "Shares Beneficially Owned After the Offering" in the table below is based on shares of our common stock outstanding after this offering, assuming shares of common stock being sold in this offering. Shares of our common stock that a person has the right to acquire within 60 days after , 2020 are deemed outstanding for purposes of computing the percentage ownership of the person holding such rights, but are not deemed outstanding for purposes of computing the percentage ownership of any other person, except with respect to the percentage ownership of all directors and executive officers as a group.

	Shares Beneficially Owned Prior to the Offering		Shares Beneficially Owned After the Offering	
Name and Address of Beneficial Owner	Number	Percent	Number	Percent
5% and Greater Stockholders				
Athyrium Capital Management, LP		%		%
Named Executive Officer and Directors				
Harry Stylli, Ph.D.		%		%
Jeffrey D. Alter		%		%
John T. Bigalke		%		%
Jeffrey A. Ferrell		%		%
Brian L. Kotzin, M.D.		%		%
Samuel R. Nussbaum, M.D.		%		%
Lynne Powell		%		%
All Executive Officers and Directors as a group (persons)		%		%

CERTAIN RELATIONSHIPS AND RELATED PARTY TRANSACTIONS

The following is a summary of each transaction or series of similar transactions since January 1, 2017, or any currently proposed transaction, to which we were or are a party in which:

- the amount involved exceeded or exceeds $120,000; and
- any of our directors or executive officers, any holder of 5% of any class of our voting capital stock or any member of his or her immediate family had or will have a direct or indirect material interest.

Beneficial ownership is determined in accordance with the rules of the SEC and generally includes voting or investment power with respect to such securities.

Related Party Transactions

Sales of Series B Preferred Stock

In October 2017, we entered into the Credit Agreement with Athyrium Opportunities III Co-Invest 1 LP, as collateral agent and a lender, which is a fund managed by Athyrium. Athyrium beneficially owns more than 5% of a class of our voting securities and has designated a director on our Board.

The Credit Agreement provides for a term loan of $75.0 million, which accrues interest at a rate of 9.5% and is due October 27, 2022. The term loan contains customary covenants, including a requirement that we maintain a minimum unrestricted cash balance at all times of at least $5.0 million. The term loan is secured by all of our tangible and intangible property and assets, with the exception of our intellectual property. As of December 31, 2019, $ million in principal was outstanding under the term loan. Through December 31, 2019, we have paid $ million in interest on the term loan.

The Credit Agreement also provided for the issuance of a warrant to purchase 1,416,431 shares of our Series B Preferred Stock at an initial exercise price of $3.53 per share. For a more detailed description of the Series B Preferred Stock Purchase Warrant, see “Description of Capital Stock—Warrant.”

A portion of the proceeds of the term loan was used to repay in full the $20.0 million of principal plus accrued and unpaid interest on a credit and security agreement we entered into in June 2013 with other funds managed by Athyrium.

In October 2017, we also completed an equity financing and issued and sold an aggregate of 14,164,306 shares of our newly created Series B Preferred Stock at a purchase price of $3.53 per share. We issued and sold the shares of Series B Preferred Stock pursuant to a stock purchase agreement entered into with Athyrium Opportunities III Co-Invest 1 LP, a fund managed by Athyrium, for an aggregate purchase price of approximately $50.0 million. Each share of our Series B Preferred Stock is convertible into one share of common stock. The purchase price was paid in the form of (i) cash in an amount equal to $37.5 million and (ii) the delivery of 3,489,885 shares of our Series A-2 Preferred Stock, which shares of Series A-2 Preferred Stock had been purchased from Dr. Stylli, our Chairman and Chief Executive Officer, for $12.5 million.

In August 2019, we completed an equity financing and issued and sold an aggregate of 9,090,910 shares of our Series B Preferred Stock at a purchase price of $2.75 per share. The shares were issued and sold pursuant to a stock purchase agreement entered into with Athyrium Opportunities III Acquisition LP, a fund managed by Athyrium, a beneficial owner of more than 5% of a class of our voting securities, for an aggregate purchase price of $25.0 million. Each share of our Series B Preferred Stock is convertible into one share of common stock. Concurrent with the issuance, we offered all holders of our Series A-1 Preferred Stock the opportunity to exchange their shares of Series A-1 Preferred Stock for Series B Preferred Stock. All holders of Series A-1 Preferred Stock exchanged all of their shares of Series A-1 Preferred Stock (an aggregate amount of 1,500,000 shares) for an aggregate of 35,664,241 shares of Series B Preferred Stock. In connection with the issuance, we amended and restated our Investors’ Rights Agreement, Co-Sale Agreement, and Voting Agreement, as described in further detail below.

On November 12, 2019, we entered into a stock purchase agreement pursuant to which we issued and sold 11,111,111 shares of our Series B Preferred Stock to Athyrium Opportunities III Acquisition 2 LP, a fund managed by Athyrium, at a purchase price of $2.25 per share for an aggregate purchase price of $25.0 million. A 1.22222222-for-1 stock split for our Series B Preferred Stock shares and Series B Preferred Stock Purchase Warrant issued and outstanding was effected on November 12, 2019 pursuant to an amendment and restatement of our certificate of incorporation. The conversion price of the Series B Preferred Stock and exercise price of the outstanding Series B Preferred Stock Warrant were automatically adjusted from $2.75 to $2.25 per share. As a result of the stock split, we issued an additional 13,985,993 shares of Series B Preferred Stock and adjusted the Series B Preferred Stock to be a warrant to purchase 2,222,222 shares of Series B Preferred Stock.

On November 22, 2019, we completed an additional equity financing pursuant to the Series B Stock Purchase Agreement executed on November 12, 2019 with Beaver Creek Intermediate Fund, Ltd., an existing investor and Dr. Stylli, our Chairman and Chief Executive Officer, for an aggregate purchase price of $6.1 million. We issued an aggregate of 2,722,222 shares of Series B Preferred Stock at a purchase price of $2.25 per share.

On December 19, 2019, we completed an additional equity financing pursuant to the Series B Stock Purchase Agreement executed on November 12, 2019 with Athyrium Opportunities III Acquisition 2 LP for an aggregate purchase price of $25.0 million. We issued on aggregate of 11,111,111 shares of Series B Preferred Stock at a purchase price of $2.25 per share.

Fourth Amended and Restated Investors' Rights Agreement

We are party to a fourth amended and restated investors' rights agreement, effective as of August 27, 2019, which provides certain holders of our capital stock, including Dr. Stylli and funds managed by Athyrium, with certain registration rights, including the right to demand that we file a registration statement or request that their shares be covered by a registration statement that we are otherwise filing. For a more detailed description of these registration rights, see "Description of Capital Stock—Registration Rights."

Fourth Amended and Restated Voting Agreement

We are party to a fourth amended and restated voting agreement, effective as of August 27, 2019, under which certain holders of our capital stock, including Dr. Stylli, funds managed by Athyrium, and three of our founders, which three founders are referred to as the Key Holders, have agreed to vote in a certain way on certain matters, including with respect to the election of our directors. All of our current directors were elected pursuant to the terms of this agreement. The fourth amended and restated voting agreement will terminate upon the completion of this offering.

Fourth Amended and Restated Co-Sale Agreement

We are party to a fourth amended and restated co-sale agreement, effective as of August 27, 2019, with certain holders of our capital stock, including Dr. Stylli and funds managed by Athyrium, pursuant to which we have a right of first refusal on certain transfers of our shares by the Key Holders, holders of our preferred stock have a secondary right of first refusal on such transfers, and such preferred stock holders have a right of co-sale in respect of such transfers. The fourth amended and restated co-sale agreement will terminate upon the completion of this offering.

Related Party Transaction Policy

Prior to this offering, we did not have a formal policy regarding approval of transactions with related parties. To date, all transactions with related parties have been approved by the directors not interested in the transaction pursuant to Section 144(a)(1) of the Delaware General Corporation Law. We will adopt a related party transaction policy that sets forth our procedures for the identification, review, consideration and approval or ratification of related person transactions. The policy will become effective upon the execution of the

underwriting agreement for this offering. For purposes of our policy only, a related person transaction is a transaction, arrangement or relationship, or any series of similar transactions, arrangements or relationships, in which we and any related person are, were or will be participants in which the amount involved exceeds $100,000. A related person is any executive officer, director, or beneficial owner of more than 5% of any class of our voting securities, including any of their immediate family members and any entity owned or controlled by such persons. Transactions involving compensation for services provided to us as an employee or director, among other limited exceptions, are deemed to have standing pre-approval by the Audit Committee but may be specifically reviewed if appropriate in light of the facts and circumstances.

Under the policy, if a transaction has been identified as a related party transaction, including any transaction that was not a related party transaction when originally consummated or any transaction that was not initially identified as a related party transaction prior to consummation, our management must present information regarding the related party transaction to our Audit Committee for review, consideration and approval or ratification. The presentation must include a description of, among other matters, the material facts, the interests, direct and indirect, of the related persons, the benefits to us of the transaction and whether the transaction is on terms that are comparable to the terms available to or from, as the case may be, an unrelated third party or to or from employees generally. Under the policy, we will collect information that we deem reasonably necessary from each director, executive officer and, to the extent feasible, significant stockholder to enable us to identify any existing or potential related party transactions and to effectuate the terms of the policy. In addition, under our Code of Conduct and Ethics, our employees and directors have an affirmative responsibility to disclose any transaction or relationship that reasonably could be expected to give rise to a conflict of interest. In considering related party transactions, our Audit Committee will take into account the relevant available facts and circumstances including, but not limited to:

- the risks, costs and benefits to us;
- the impact on a director’s independence in the event that the related person is a director, immediate family member of a director or an entity with which a director is affiliated;
- the availability of other sources for comparable services or products; and
- the terms available to or from, as the case may be, unrelated third parties or to or from employees generally

The policy requires that, in determining whether to approve, ratify, or reject a related party transaction, our Audit Committee consider, in light of known circumstances, whether the transaction is in, or is not inconsistent with, our best interests and those of our stockholders, as our Audit Committee determines in the good faith exercise of its discretion.

The transactions described below were consummated prior to our adoption of the formal, written policy described above, and, accordingly, the foregoing policies and procedures were not followed with respect to these transactions. However, we believe that the terms obtained or consideration that we paid or received, as applicable, in connection with the transactions described below were comparable to terms available or the amounts that would be paid or received, as applicable, in arms-length transactions at such time.

DESCRIPTION OF CAPITAL STOCK

General

The following is a summary of the material terms of our capital stock, as well as other material terms of our seventh amended and restated certificate of incorporation and amended and restated bylaws, as each will be in effect immediately prior to the completion of this offering, and certain provisions of Delaware law. This summary does not purport to be complete and is qualified in its entirety by the provisions of our seventh amended and restated certificate of incorporation and amended and restated bylaws, copies of which will be filed with the SEC as exhibits to the registration statement, of which this prospectus forms a part.

Upon the completion of this offering, our authorized capital stock will consist of shares of common stock, $0.001 par value per share, and shares of "blank check" preferred stock, $0.001 par value per share.

As of , 2020, shares of our common stock and shares of preferred stock were outstanding and held by stockholders of record. This amount does not take into account the conversion of all outstanding shares of our preferred stock into common stock upon the completion of this offering.

Common Stock

Our seventh amended and restated certificate of incorporation will authorize the issuance of up to shares of our common stock. All outstanding shares of our common stock are validly issued, fully paid and nonassessable, and the shares of our common stock to be issued in connection with this offering will be validly issued, fully paid and nonassessable.

The holders of our common stock will be entitled to one vote per share on all matters submitted to a vote of stockholders, and our seventh amended and restated certificate of incorporation will not provide for cumulative voting in the election of directors. The holders of our common stock will receive ratably any dividends declared by our Board out of funds legally available therefor. In the event of our liquidation, dissolution, or winding-up, the holders of our common stock will be entitled to share ratably in all assets remaining after payment of or provision for any liabilities.

Preferred Stock

As of , 2020, there were shares of our preferred stock outstanding, which will convert into shares of our common stock upon the completion of this offering.

Upon completion of this offering, all of our previously outstanding shares of preferred stock will have been converted into shares of our common stock and we will have no shares of preferred stock outstanding. Under the terms of our seventh amended and restated certificate of incorporation, our Board will have the authority, without further action by our stockholders, to issue up to shares of preferred stock in one or more series, to establish from time to time the number of shares to be included in each such series, to fix the dividend, voting and other rights, preferences and privileges of the shares of each wholly unissued series and any qualifications, limitations or restrictions thereon, and to increase or decrease the number of shares of any such series, but not below the number of shares of such series then outstanding.

Our Board may authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of our common stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring, or preventing a change in our control and may adversely affect the market price of our common stock and the voting and other rights of the holders of our common stock. We have no current plans to issue any shares of preferred stock.

Warrant

In connection with the Credit and Security Agreement we entered into with Athyrium Opportunities III Co-Invest 1 LP, an affiliate of Athyrium Capital Management, LP, and the other lenders party thereto, we issued to Athyrium Opportunities III Co-Invest 1 LP a warrant to purchase 1,416,431 shares of our Series B Preferred Stock at an initial exercise price of $3.53 per share. The Series B Preferred Stock Purchase Warrant provides for the adjustment of the exercise price and the number of shares issuable upon the exercise of the warrant in the event of certain stock dividends, stock splits, recapitalizations, reclassifications, consolidations and other fundamental transactions. Upon the completion of this offering, the Series B Preferred Stock Purchase Warrant will be exercisable for the number of shares of our common stock that would be issuable on conversion of the shares of our Series B Preferred Stock that could otherwise be purchased pursuant to the warrant. In addition, if the initial public offering price of the shares of our common stock sold in this offering is less than the exercise price per share of our common stock that is otherwise payable under the Series B Preferred Stock Purchase Warrant, the exercise price will be decreased to equal the initial public offering price in this offering.

On August 27, 2019, the company and Athyrium Opportunities III Co-Invest 1 LP amended the Series B Preferred Stock Purchase Warrant in connection with the share split of the Series B Preferred Stock, which share split became effective upon the filing of our fifth amended and restated certificate of incorporation. Pursuant to the first amendment, we adjusted the Series B Preferred Stock Purchase Warrant to be a warrant to purchase 1,818,182 shares of our Series B Preferred Stock at an initial exercise price of $2.75.

On November 12, 2019, the Series B Preferred Stock Purchase Warrant was adjusted pursuant to its terms in connection with the share split of the Series B Preferred Stock, which share split became effective upon the filing of our sixth amended and restated certificate of incorporation. Pursuant to the terms of the Series B Preferred Stock Purchase Warrant, we adjusted the Series B Preferred Stock Purchase Warrant to be a warrant to purchase 2,222,222 shares of our Series B Preferred Stock at an initial exercise price of $2.25.

As of , 2020, the Series B Preferred Stock Purchase Warrant is exercisable for an aggregate of 2,222,222 shares of our Series B Preferred Stock at an exercise price of $2.25 per share, and after the completion of this offering, unless earlier exercised, is exercisable until its expiration on October 27, 2022.

Registration Rights

We are party to a fourth amended and restated investors' rights agreement which provides that holders of our preferred stock and holders of our common stock have certain registration rights described below. The registration of shares of our common stock pursuant to the exercise of registration rights described below would enable holders to sell these shares without restriction under the Securities Act when the registration statement is declared effective. We will pay all expenses related to any demand, piggyback, or Form S-3 registration described below, with the exception of underwriting discounts and commissions.

The registration rights described below will expire (i) five years after the completion of this offering, (ii) with respect to any particular holder, at the time that such holder can sell all its registrable securities under Rule 144 or another similar exemption under the Securities Act without limitation during a three-month period without registration or (iii) upon termination of the fourth amended and restated investors' rights agreement.

Demand Registration Rights

At any time beginning 210 days after the effective date of the registration statement of which this prospectus forms a part, the holders of 50% or more of the registrable securities then outstanding may make a written request that we register all or a portion of their shares, subject to certain specified exceptions. Such request for registration must cover securities with an aggregate offering price, net of underwriting discounts and commissions, of at least $20,000,000. We will prepare and file a registration statement as requested, unless, in the good faith judgment of our Board, such registration would be seriously detrimental to the company and its

stockholders and filing should be deferred. We may defer only once in any 12-month period, and such deferral shall not exceed 120 days after receipt of the request. In addition, we are not obligated to effect more than two of these registrations within any twelve 12-month period or if the holders' proposed registered securities may be immediately registered on Form S-3.

Piggyback Registration Rights

Subject to certain specified exceptions, if we propose to register any of our securities under the Securities Act either for our own account or for the account of other stockholders, the holders of shares having registration rights are entitled to written notice and certain "piggyback" registration rights allowing them to include their shares in our registration statement. These registration rights are subject to specified conditions and limitations, including the right of the underwriters, in their sole discretion, to limit the number of shares included in any such offering under certain circumstances, but not below 15% of the total amount of securities included in such offering, unless (i) such offering is the initial public offering or (ii) all other securities, other than our securities, are entirely excluded from the offering.

Form S-3 Registration Rights

At any time after we are qualified to file a registration statement on Form S-3, and subject to limitations and conditions, the holders of 50% or more of the registrable securities then outstanding are entitled to written notice of such registration and may make a written request that we prepare and file a registration statement on Form S-3 under the Securities Act covering their shares, so long as the aggregate price to the public, net of the underwriters' discounts and commissions, is at least $10,000,000. We will prepare and file the Form S-3 registration as requested, unless, in the good faith judgment of our board of directors, such registration would be seriously detrimental to the company and its stockholders and filing should be deferred. We may defer only once in any 12-month period, and such deferral shall not exceed 120 days after receipt of the request. In addition, we are not obligated to prepare or file any of these registration statements (i) within 180 days after the effective date of a registration statement pursuant to demand or piggyback registration rights or (ii) if two of these registrations have been completed within any 12-month period.

Our Certificate of Incorporation and Our Bylaws

Special Meetings; Action by Written Consent

Under our seventh amended and restated certificate of incorporation, only a majority of the members of our Board then in office may be able to call special meetings of stockholders and only those matters set forth in the notice of the special meeting may be considered or acted upon at a special meeting of stockholders. Under our seventh amended and restated certificate of incorporation, stockholders will be permitted to take action by written consent with respect to any matter that can be acted upon at a meeting of our stockholders for so long as Dr. Stylli, entities affiliated with Athyrium Capital Management, LP and entities affiliated with Andrew Midler collectively own more than 50% of our issued and outstanding common stock. In all other circumstances, our seventh amended and restated certificate of incorporation provides that stockholders may not take any action by written consent in lieu of a meeting. This limit may lengthen the amount of time required to take stockholder actions and would prevent the amendment of our amended and restated bylaws or removal of directors by our stockholders without holding a meeting of stockholders.

Requirements for Advance Notification of Stockholder Nominations and Proposals

Our amended and restated bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as directors that specify certain requirements as to the timing, form, and content of a stockholder's notice. Business that may be conducted at an annual meeting of stockholders will be limited to those matters properly brought before the meeting. These provisions may make it more difficult for our stockholders to nominate directors at or bring other matters before our annual meeting.

Election and Removal of Directors

Directors will be elected by a plurality vote. Our Board will have the right to increase or decrease the size of the Board and to fill vacancies on the Board. Directors may be removed with or without cause with the approval of the holders of a majority of our outstanding common stock. These provisions prevent stockholders from increasing the size of our Board and gaining control of our Board by filling the resulting vacancies with its own nominees.

Issuance of Undesignated Preferred Stock

Under our seventh amended and restated certificate of incorporation, our Board has the authority, without further action by the stockholders, to issue up to shares of undesignated preferred stock with rights and preferences, including voting rights, designated from time to time by our Board. The existence of authorized but unissued shares of preferred stock enables our Board to make it more difficult to attempt to obtain control of us by means of a merger, tender offer, proxy contest, or otherwise.

Delaware General Corporation Law Section 203

As a Delaware corporation, we are also subject to the anti-takeover provisions of Section 203 of the Delaware General Corporation Law, which prohibits a Delaware corporation from engaging in a business combination specified in the statute with an interested stockholder (as defined in the statute) for a period of three years after the date of the transaction in which the person first becomes an interested stockholder, unless the business combination is approved in advance by a majority of the independent directors or by the holders of at least two-thirds of the outstanding disinterested shares. The application of Section 203 of the Delaware General Corporation Law could also have the effect of delaying or preventing a change of control of us.

Exclusive Forum Selection Clause

Our seventh amended and restated certificate of incorporation requires that the Court of Chancery of the State of Delaware be the exclusive forum for the following types of actions or proceedings under Delaware statutory or common law: (1) any derivative action or proceeding brought on our behalf; (2) any action asserting a breach of fiduciary duty owed by any director, officer or other employee to us or our stockholders; (3) any action asserting a claim against us or any director or officer or other employee arising pursuant to the Delaware General Corporation Law, our certificate of incorporation or our bylaws; or (4) any action asserting a claim against us or any director or officer or other employee that is governed by the internal affairs doctrine. This provision would not apply to claims brought to enforce a duty or liability created by the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction. Our seventh amended and restated certificate of incorporation provides further that the federal district courts of the United States will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act, subject to and contingent upon a final adjudication in the State of Delaware of the enforceability of such exclusive forum provision. Although we believe these provisions benefit us by providing increased consistency in the application of Delaware law for the specified types of actions and proceedings, the provisions may have the effect of discouraging lawsuits against us or our directors or officers.

Transfer Agent and Registrar

will serve as the transfer agent and registrar for our common stock.

Listing

We intend to apply to list our common stock on The Nasdaq Global Select Market under the symbol “PROG.”

SHARES ELIGIBLE FOR FUTURE SALE

Prior to this offering, there has been no public market for shares of our common stock. Future sales of our common stock, including shares issued upon the vesting of restricted stock units or the exercise of options or warrants, in the public market after this offering, or the perception that those sales may occur, could cause the prevailing market price for our common stock to fall or impair our ability to raise equity capital in the future. As described below, only a limited number of shares of our common stock will be available for sale in the public market for a period of several months after the completion of this offering due to the contractual and legal restrictions on resale described below. Future sales of our common stock in the public market either before (to the extent permitted) or after restrictions lapse, or the perception that those sales may occur, could adversely affect the prevailing market price of our common stock at such time and our ability to raise equity capital at a time and price we deem appropriate.

Sale of Restricted Shares

Based on the number of shares of our common stock outstanding as of September 30, 2019, upon the completion of this offering and assuming the automatic conversion of all outstanding shares of our preferred stock into an aggregate of shares of common stock, we will have an aggregate of shares of common stock outstanding (or shares if the underwriters exercise in full their option to purchase additional shares). Of these outstanding shares of our common stock, all of the shares of common stock sold in this offering (plus any shares purchased by the underwriters pursuant to the exercise of their option to purchase additional shares) will be freely tradable without restriction or further registration under the Securities Act, except that any such shares held by our affiliates, as that term is defined in Rule 144 of the Securities Act, may generally be sold only in compliance with the limitations described below. All remaining shares of our common stock held by existing stockholders immediately prior to the completion of this offering will be "restricted securities" as such term is defined in Rule 144. These restricted securities were issued and sold by us, or will be issued and sold by us, in private transactions and are eligible for public sale only if registered under the Securities Act or if they qualify for an exemption from registration under the Securities Act, including the exemptions provided by Rule 144 or Rule 701, which rules are summarized below.

Lock-Up Agreements

We and all of our directors and officers, as well as the other holders of substantially all shares of our common stock outstanding immediately prior to the completion of this offering, have agreed with the underwriters that, for a period of 180 days following the date of this prospectus, subject to certain exceptions, we and they will not, directly or indirectly, offer, pledge, announce the intention to sell, contract to sell, sell any option or contract to purchase, sell any option or contract to purchase, grant any option, right or warrant to purchase, make any short sale or otherwise transfer or dispose of any of shares of our common stock, or any options or warrants to purchase any shares of our common stock, or any securities convertible into, or exchangeable for or that represent the right to receive shares of our common stock. may, in their sole discretion, release all or any portion of the shares from these restrictions.

Rule 144

In general, under Rule 144, as currently in effect, once we have been subject to the public company reporting requirements of the Exchange Act for at least 90 days, a person (or persons whose shares are required to be aggregated) who is not deemed to have been one of our "affiliates" for purposes of Rule 144 at any time during the three months preceding a sale, and who has beneficially owned restricted securities within the meaning of Rule 144 for at least six months, including the holding period of any prior owner other than one of our "affiliates," is entitled to sell those shares in the public market (subject to the lock-up agreement referred to above, if applicable) without complying with the manner of sale, volume limitations or notice provisions of Rule 144, but subject to compliance with the public information requirements of Rule 144. If such a person has beneficially owned the shares proposed to be sold for at least one year, including the holding period of any prior

owner other than affiliates, then such person is entitled to sell such shares in the public market without complying with any of the requirements of Rule 144 (subject to the lock-up agreement referred to above, if applicable). In general, under Rule 144, as currently in effect, once we have been subject to the public company reporting requirements of the Exchange Act for at least 90 days, our affiliates, as defined in Rule 144, who have beneficially owned the shares proposed to be sold for at least six months are entitled to sell in the public market, upon expiration of any applicable lock-up agreements and within any three-month period, a number of those shares of our common stock that does not exceed the greater of:

- one percent of the number of shares of our common stock then outstanding, which will equal approximately shares of our common stock immediately after this offering (calculated on the basis of the assumptions described above and assuming no exercise of the underwriters' option to purchase additional shares of our common stock); or
- the average weekly trading volume of our common stock on The Nasdaq Global Select Market during the four calendar weeks preceding the filing of a notice on Form 144 with respect to such sale.

Such sales under Rule 144 by our "affiliates" or persons selling shares on behalf of our "affiliates" are also subject to certain manner of sale provisions, notice requirements and to the availability of current public information about us. Notwithstanding the availability of Rule 144, the holders of substantially all of our restricted securities have entered into lock-up agreements as referenced above and their restricted securities will become eligible for sale (subject to the above limitations under Rule 144) upon the expiration of the restrictions set forth in those agreements.

Rule 701

In general, under Rule 701, as currently in effect, any of our employees, directors, officers, consultants, or advisors who acquired common stock from us in connection with a written compensatory stock or option plan or other written agreement in compliance with Rule 701 under the Securities Act before the effective date of the registration statement of which this prospectus is a part (to the extent such common stock is not subject to a lock-up agreement) is entitled to rely on Rule 701 to resell such shares beginning 90 days after we become subject to the public company reporting requirements of the Exchange Act in reliance on Rule 144, but without compliance with the holding period requirements contained in Rule 144. Accordingly, subject to any applicable lock-up agreements, beginning 90 days after we become subject to the public company reporting requirements of the Exchange Act, under Rule 701, persons who are not our affiliates, as defined in Rule 144, may resell those shares without complying with the minimum holding period or public information requirements of Rule 144, and persons who are our affiliates may resell those shares without compliance with Rule 144's minimum holding period requirements (subject to the terms of the lock-up agreements referred to above, if applicable). In addition, after the effective date of this offering, we plan to register on a Form S-8 registration statement all shares of our common stock that we may issue under our equity compensation plans. As a result, these shares can be freely sold in the public market upon issuance, subject to volume limitations applicable to affiliates.

Upon expiration of the 180-day lock-up period described above, shares of our common stock will be eligible for sale under Rule 144 (including shares issued pursuant to Rule 701). We cannot estimate the timing or the number of shares that our existing stockholders and other equity holders may elect to sell under Rule 144 or pursuant to registration statements. For a description of certain registration rights granted, see "Description of Capital Stock—Registration Rights."

MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES TO NON-U.S. HOLDERS

The following discussion is a summary of material U.S. federal income tax consequences to Non-U.S. Holders (as defined below) of the purchase, ownership, and disposition of our common stock issued pursuant to this offering. The discussion does not purport to be a complete analysis of all potential tax consequences. The consequences of other U.S. federal tax laws, such as estate and gift tax laws, and any applicable state, local or non-U.S. tax laws, are not discussed. This discussion is based on the Code, Treasury Regulations promulgated under the Code, judicial decisions and published rulings and administrative pronouncements of the U.S. Internal Revenue Service, or IRS, in each case in effect as of the date hereof. These authorities may change or be subject to differing interpretations. Any such change or differing interpretation may be applied retroactively in a manner that could adversely affect a Non-U.S. Holder of our common stock. We have not sought and will not seek any rulings from the IRS regarding the matters discussed below. There can be no assurance the IRS or a court will not take a contrary position to that discussed below regarding the tax consequences of the purchase, ownership, and disposition of our common stock.

This discussion is limited to Non-U.S. Holders that hold our common stock as a "capital asset" within the meaning of Section 1221 of the Code (generally, property held for investment). This discussion does not address all U.S. federal income tax consequences relevant to a Non-U.S. Holder's particular circumstances, including without limitation the impact of the alternative minimum tax or the Medicare contribution tax on net investment income. In addition, it does not address consequences relevant to Non-U.S. Holders subject to special rules, including, without limitation:

- U.S. expatriates and former citizens or long-term residents of the United States;
- persons holding our common stock as part of a hedge, straddle or other risk-reduction strategy or as part of a conversion transaction or other integrated investment;
- banks, insurance companies and other financial institutions;
- brokers, dealers or traders in securities;
- "controlled foreign corporations," "passive foreign investment companies" and corporations that accumulate earnings to avoid U.S. federal income tax;
- partnerships or other entities or arrangements classified as partnerships for U.S. federal income tax purposes (and investors therein);
- tax-exempt organizations or governmental organizations;
- persons deemed to sell our common stock under the constructive sale provisions of the Code;
- persons who hold or receive our common stock pursuant to the exercise of any employee stock option or otherwise as compensation; and
- tax-qualified retirement plans.

If an entity or arrangement classified as a partnership for U.S. federal income tax purposes holds our common stock, the tax treatment of a partner in the partnership will depend on the status of the partner, the activities of the partnership and certain determinations made at the partner level. Accordingly, partnerships holding our common stock and the partners in such partnerships should consult their tax advisors regarding the U.S. federal income tax consequences to them.

This discussion is for informational purposes only and is not tax advice. Investors should consult their tax advisors with respect to the application of the U.S. federal income tax laws to their particular situations as well as any tax consequences of the purchase, ownership and disposition of our common stock arising under the U.S. federal estate or gift tax laws or under the laws of any state, local or non-U.S. taxing jurisdiction or under any applicable income tax treaty.

Definition of a Non-U.S. Holder

For purposes of this discussion, a "Non-U.S. Holder" is any beneficial owner of our common stock that is neither a "U.S. person" nor an entity or arrangement classified as a partnership for U.S. federal income tax purposes. A U.S. person is any person that, for U.S. federal income tax purposes, is or is treated as any of the following:

- an individual who is a citizen or resident of the United States;
- a corporation created or organized under the laws of the United States, any state thereof or the District of Columbia;
- an estate, the income of which is subject to U.S. federal income tax regardless of its source; or
- a trust that: (i) is subject to the primary supervision of a U.S. court and the control of one or more "United States persons" (within the meaning of Section 7701(a)(30) of the Code); or (ii) has a valid election in effect to be treated as a U.S. person for U.S. federal income tax purposes.

Distributions

As described in the section entitled "Dividend Policy," we have no present intention to pay cash dividends on our common stock. However, if we make distributions of cash or other property on our common stock, those distributions will generally constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. If the amount of such distributions exceed our current and accumulated earnings and profits, such excess will generally constitute a tax-free return of capital and will first be applied against and reduce a Non-U.S. Holder's adjusted tax basis in its common stock, but not below zero. Any excess will be treated as capital gain and will be treated as described below under "Sale or Other Taxable Disposition."

Subject to the discussion below on effectively connected income, dividends paid to a Non-U.S. Holder of our common stock generally will be subject to U.S. federal withholding tax at a rate of 30% of the gross amount of the dividends (or such lower rate specified by an applicable income tax treaty, provided the Non-U.S. Holder furnishes the applicable withholding agent with documentation required to claim benefits under such tax treaty (generally, a valid IRS Form W-8BEN or W-8BEN-E or a suitable successor or substitute form)). A Non-U.S. Holder that does not timely furnish the required documentation, but that qualifies for a reduced treaty rate, may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS. Non-U.S. Holders should consult their tax advisors regarding U.S. federal withholding tax on distributions, including their eligibility for benefits under any applicable income tax treaties and the availability of a refund on any excess U.S. federal tax withheld.

If dividends paid to a Non-U.S. Holder are effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States (or, if required by an applicable income tax treaty, the Non-U.S. Holder maintains a permanent establishment in the United States to which such dividends are attributable), the Non-U.S. Holder will generally be exempt from the U.S. federal withholding tax described above. To claim the exemption, the Non-U.S. Holder must furnish to the applicable withholding agent a valid IRS Form W-8ECI (or a suitable successor or substitute form) certifying that the dividends are effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States.

However, any such effectively connected dividends will be subject to U.S. federal income tax on a net income basis at the regular rates applicable to U.S. persons. A Non-U.S. Holder that is a corporation also may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on such effectively connected dividends, as adjusted for certain items. Non-U.S. Holders should consult their tax advisors regarding any applicable tax treaties that may provide for different rules.

The foregoing discussion is subject to the discussion below under "Additional Withholding Tax on Payments Made to Foreign Accounts" and "Information Reporting and Backup Withholding."

Sale or Other Taxable Disposition

Subject to the discussion below regarding backup withholding and the Foreign Account Tax Compliance Act, or FATCA, a Non-U.S. Holder generally will not be subject to U.S. federal income or withholding tax on any gain realized upon the sale or other taxable disposition of our common stock unless:

- the gain is effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States (or, if required by an applicable income tax treaty, the Non-U.S. Holder maintains a permanent establishment in the United States to which such gain is attributable);
- the Non-U.S. Holder is a nonresident alien individual present in the United States for 183 days or more during the taxable year of the disposition and certain other requirements are met; or
- our common stock constitutes a U.S. real property interest, or USRPI, by reason of our status as a U.S. real property holding corporation, or USRPHC, for U.S. federal income tax purposes.

Gain described in the first bullet point above generally will be subject to U.S. federal income tax on a net income basis at the regular rates applicable to U.S. persons. A Non-U.S. Holder that is a corporation also may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on such effectively connected gain, as adjusted for certain items.

Gain described in the second bullet point above will be subject to U.S. federal income tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty), which may be offset by U.S. source capital losses of the Non-U.S. Holder (even though the individual is not considered a resident of the United States), provided the Non-U.S. Holder has timely filed U.S. federal income tax returns with respect to such losses.

With respect to the third bullet point above, we believe we currently are not, and we do not anticipate becoming, a USRPHC. However, because the determination of whether we are a USRPHC depends on the fair market value of our USRPIs relative to the fair market value of our non-U.S. real property interests and our other business assets, we cannot assure you that we will not become a USRPHC in the future. Even if we are or were to become a USRPHC, gain arising from the sale or other taxable disposition by a Non-U.S. Holder of our common stock will not be subject to U.S. federal income tax if our common stock is "regularly traded" on an "established securities market" (as such terms are defined by applicable Treasury Regulations), and such Non-U.S. Holder owned, actually and constructively, 5% or less of our common stock throughout the shorter of the 5-year period ending on the date of the sale or other taxable disposition or the Non-U.S. Holder's holding period. If we are determined to be a USRPHC and the foregoing exception does not apply, the Non-U.S. Holder generally will be taxed on its net gain derived from the disposition at the U.S. federal income tax rates applicable to U.S. persons. No assurance can be provided that our common stock will be regularly traded on an established securities market for purposes of the rules described above.

Non-U.S. Holders should consult their tax advisors regarding potentially applicable income tax treaties that may provide for different rules.

Information Reporting and Backup Withholding

Payments of dividends on our common stock generally will not be subject to backup withholding provided the applicable withholding agent does not have actual knowledge or reason to know the Non-U.S. Holder is a U.S. person and the Non-U.S. Holder certifies its non-U.S. status by furnishing a valid IRS Form W-8BEN, W-8BEN-E, W-8ECI, W-8EXP, or other applicable IRS form, or otherwise establishes an exemption. Information returns are required to be filed with the IRS in connection with any dividends on our common stock paid to the Non-U.S. Holder, regardless of whether any tax was actually withheld. Copies of these information returns may also be made available under the provisions of an applicable treaty or agreement to the tax authorities of the country in which the Non-U.S. Holder resides or is established.

Information reporting and, depending on the circumstances, backup withholding generally will apply to the proceeds of the sale or other taxable disposition of our common stock within the United States or conducted

through certain U.S.-related brokers, unless the applicable withholding agent receives the certification described above and does not have actual knowledge or reason to know that the Non-U.S. Holder is a U.S. person, or the holder otherwise establishes an exemption. Proceeds of a disposition of our common stock conducted through a non-U.S. office of a non-U.S. broker that does not have certain enumerated relationships with the United States generally will not be subject to backup withholding or information reporting.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a Non-U.S. Holder's U.S. federal income tax liability, provided the required information is timely furnished to the IRS.

Additional Withholding Tax on Payments Made to Foreign Accounts

Withholding taxes may be imposed under Sections 1471 to 1474 of the Code (such Sections commonly referred to as FATCA) on certain types of payments made to non-U.S. financial institutions and certain other non-U.S. entities. Specifically, a 30% withholding tax may be imposed on dividends on, or (subject to the proposed Treasury Regulations discussed below) gross proceeds from the sale or other disposition of, our common stock paid to a "foreign financial institution" or a "non-financial foreign entity" (each as defined in the Code), unless: (i) the foreign financial institution undertakes certain diligence, reporting and withholding obligations; (ii) the non-financial foreign entity either certifies it does not have any "substantial United States owners" (as defined in the Code) or furnishes identifying information regarding each substantial U.S. owner; or (iii) the foreign financial institution or non-financial foreign entity otherwise qualifies for an exemption from these rules. If the payee is a foreign financial institution and is subject to the diligence, reporting and withholding requirements in (i) above, it must enter into an agreement with the U.S. Treasury requiring, among other things, that it undertake to identify accounts held by certain "specified United States persons" or "United States owned foreign entities" (each as defined in the Code), annually report certain information about such accounts, and withhold 30% on certain payments to noncompliant foreign financial institutions and certain other account holders. Foreign financial institutions located in jurisdictions that have an intergovernmental agreement with the U.S. governing FATCA may be subject to different rules.

The U.S. Treasury recently released proposed regulations which, if finalized in their present form, would eliminate the federal withholding tax of 30% applicable to the gross proceeds of a sale or other disposition of our common stock. In its preamble to such proposed regulations, the U.S. Treasury stated that taxpayers may generally rely on the proposed regulations until final regulations are issued. There can be no assurance that final regulations would provide an exemption from the FATCA withholding tax for gross proceeds. The FATCA withholding tax generally applies to all withholdable payments without regard to whether the beneficial owner of the payment would otherwise be entitled to an exemption from imposition of withholding tax pursuant to an applicable tax treaty with the United States or U.S. domestic law.

Prospective investors should consult their tax advisors regarding the potential application of withholding under FATCA to their investment in our common stock.

UNDERWRITING

Subject to the terms and conditions set forth in the underwriting agreement, dated , 2020, among us and , as the representatives of the underwriters named below and the joint book-running managers of this offering, we have agreed to sell to the underwriters, and each of the underwriters has agreed, severally and not jointly, to purchase from us, the respective number of shares of common stock shown opposite its name below:

Underwriter	Number of Shares
Total	

The underwriting agreement provides that the obligations of the several underwriters are subject to certain conditions precedent such as the receipt by the underwriters of officers' certificates and legal opinions and approval of certain legal matters by their counsel. The underwriting agreement provides that the underwriters will purchase all of the shares of common stock if any of them are purchased. If an underwriter defaults, the underwriting agreement provides that the purchase commitments of the nondefaulting underwriters may be increased or the underwriting agreement may be terminated. We have agreed to indemnify the underwriters and certain of their controlling persons against certain liabilities, including liabilities under the Securities Act, and to contribute to payments that the underwriters may be required to make in respect of those liabilities.

The underwriters have advised us that, following the completion of this offering, they currently intend to make a market in the common stock as permitted by applicable laws and regulations. However, the underwriters are not obligated to do so, and the underwriters may discontinue any market-making activities at any time without notice in their sole discretion. Accordingly, no assurance can be given as to the liquidity of the trading market for the common stock, that you will be able to sell any of the common stock held by you at a particular time or that the prices that you receive when you sell will be favorable.

The underwriters are offering the shares of common stock subject to their acceptance of the shares of common stock from us and subject to prior sale. The underwriters reserve the right to withdraw, cancel, or modify offers to the public and to reject orders in whole or in part. In addition, the underwriters have advised us that they do not intend to confirm sales to any account over which they exercise discretionary authority.

Commission and Expenses

The underwriters have advised us that they propose to offer the shares of common stock to the public at the initial public offering price set forth on the cover of this prospectus and to certain dealers, which may include the underwriters, at that price less a concession not in excess of $ per share of common stock. After the offering, the initial public offering price, concession, and reallowance to dealers may be reduced by the representatives. No such reduction will change the amount of proceeds to be received by us as set forth on the cover of this prospectus.

The following table shows the public offering price, the underwriting discounts, and commissions that we are to pay the underwriters and the proceeds, before expenses, to us in connection with this offering. Such amounts are shown assuming both no exercise and full exercise of the underwriters‘ option to purchase additional shares.

	Per Share		Total	
	Without Option to Purchase Additional Shares	With Option to Purchase Additional Shares	Without Option to Purchase Additional Shares	With Option to Purchase Additional Shares
Public offering price	$	$	$	$
Underwriting discount	$	$	$	$
Proceeds, before expenses, to us	$	$	$	$

We estimate expenses payable by us in connection with this offering, other than the underwriting discounts and commissions referred to above, will be approximately $. We have agreed to reimburse the underwriters for certain of their expenses in an amount not to exceed $ in the aggregate.

Determination of Offering Price

Prior to this offering, there has not been a public market for our common stock. Consequently, the initial public offering price for our common stock will be determined by negotiations between us and the representatives. Among the factors to be considered in these negotiations will be prevailing market conditions, our financial information, market valuations of other companies that we and the underwriters believe to be comparable to us, estimates of our business potential, the present state of our development, and other factors deemed relevant.

We offer no assurances that the initial public offering price will correspond to the price at which the common stock will trade in the public market subsequent to the offering or that an active trading market for the common stock will develop and continue after the offering.

Listing

We intend to apply to have our common stock approved for listing on The Nasdaq Global Select Market under the trading symbol “PROG.”

Stamp Taxes

If you purchase shares of common stock offered in this prospectus, you may be required to pay stamp taxes and other charges under the laws and practices of the country of purchase, in addition to the offering price listed on the cover of this prospectus.

Option to Purchase Additional Shares

We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus, to purchase, from time to time, in whole or in part, up to an aggregate of shares from us at the public offering price set forth on the cover of this prospectus, less underwriting discounts and commissions. If the underwriters exercise this option, each underwriter will be obligated, subject to specified conditions, to purchase a number of additional shares proportionate to that underwriter’s initial purchase commitment as indicated in the table above. This option may be exercised only if the underwriters sell more shares than the total number set forth on the cover of this prospectus.

No Sales of Similar Securities

We, our officers, directors and holders of all or substantially all our outstanding capital stock and other securities have agreed, subject to specified exceptions, not to directly or indirectly:

- offer, pledge, sell, or contract to sell any shares of our common stock;

- sell any option or contract to purchase any shares of our common stock;
- purchase any option or contract to sell any shares of our common stock;
- grant any option, right, or warrant to purchase any shares of our common stock;
- make any short sale or otherwise transfer or dispose of any shares of our common stock;
- enter into any swap or other agreement that transfers, in whole or in part, the economic consequences of ownership of any shares of our common stock whether any such swap or transaction is to be settled by delivery of shares or other securities, in cash, or otherwise;
- make demand for or exercise any right with respect to the registration of our common stock; or
- publicly announce the intention to do any of the foregoing for a period of 180 days after the date of this prospectus without the prior written consent of .

This restriction terminates after the close of trading of our common stock on and including the 180th day after the date of this prospectus.

may, in their sole discretion and at any time or from time to time before the termination of the 180-day period, release all or any portion of the securities subject to lock-up agreements. There are no existing agreements between the underwriters and any of our stockholders who will execute a lock-up agreement providing consent to the sale of shares prior to the expiration of the lock-up period.

Stabilization

The underwriters have advised us that, pursuant to Regulation M under the Exchange Act, certain persons participating in the offering may engage in short sale transactions, stabilizing transactions, syndicate covering transactions or the imposition of penalty bids in connection with this offering. These activities may have the effect of stabilizing or maintaining the market price of the common stock at a level above that which might otherwise prevail in the open market. Establishing short sales positions may involve either “covered” short sales or “naked” short sales.

“Covered” short sales are sales made in an amount not greater than the underwriters’ option to purchase additional shares of our common stock in this offering. The underwriters may close out any covered short position by either exercising their option to purchase additional shares of our common stock or purchasing shares of our common stock in the open market. In determining the source of shares to close out the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the option to purchase additional shares.

“Naked” short sales are sales in excess of the option to purchase additional shares of our common stock. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the shares of our common stock in the open market after pricing that could adversely affect investors who purchase in this offering.

A stabilizing bid is a bid for the purchase of shares of common stock on behalf of the underwriters for the purpose of fixing or maintaining the price of the common stock. A syndicate covering transaction is the bid for or the purchase of shares of common stock on behalf of the underwriters to reduce a short position incurred by the underwriters in connection with the offering. Similar to other purchase transactions, the underwriter’s purchases to cover the syndicate short sales may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market. A penalty bid is an

arrangement permitting the underwriters to reclaim the selling concession otherwise accruing to a syndicate member in connection with the offering if the shares of common stock originally sold by such syndicate member are purchased in a syndicate covering transaction and therefore have not been effectively placed by such syndicate member.

Neither we nor any of the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. The underwriters are not obligated to engage in these activities and, if commenced, any of the activities may be discontinued at any time.

The underwriters may also engage in passive market making transactions in our common stock on The Nasdaq Global Select Market in accordance with Rule 103 of Regulation M during a period before the commencement of offers or sales of shares of our common stock in this offering and extending through the completion of distribution. A passive market maker must display its bid at a price not in excess of the highest independent bid of that security. However, if all independent bids are lowered below the passive market maker's bid, that bid must then be lowered when specified purchase limits are exceeded.

Electronic Distribution

A prospectus in electronic format may be made available by e-mail or on the web sites or through online services maintained by one or more of the underwriters or their affiliates. In those cases, prospective investors may view offering terms online and may be allowed to place orders online. The underwriters may agree with us to allocate a specific number of shares of common stock for sale to online brokerage account holders. Any such allocation for online distributions will be made by the underwriters on the same basis as other allocations. Other than the prospectus in electronic format, the information on the underwriters' web sites and any information contained in any other web site maintained by any of the underwriters is not part of this prospectus, has not been approved and/or endorsed by us or the underwriters and should not be relied upon by investors.

Other Activities and Relationships

The underwriters and certain of their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing, and brokerage activities. The underwriters and certain of their respective affiliates have, from time to time, performed, and may in the future perform, various commercial and investment banking and financial advisory services for us and our affiliates, for which they received or will receive customary fees and expenses.

In the ordinary course of their various business activities, the underwriters and certain of their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments issued by us and our affiliates. If the underwriters or their respective affiliates have a lending relationship with us, they routinely hedge their credit exposure to us consistent with their customary risk management policies. The underwriters and their respective affiliates may hedge such exposure by entering into transactions which consist of either the purchase of credit default swaps or the creation of short positions in our securities or the securities of our affiliates, including potentially the common stock offered hereby. Any such short positions could adversely affect future trading prices of the common stock offered hereby. The underwriters and certain of their respective affiliates may also communicate independent investment recommendations, market color, or trading ideas and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

Selling Restrictions

Notice to Prospective Investors in EEA

In relation to each member state of the European Economic Area which has implemented the Prospectus Regulation (each, a "Relevant Member State"), no offer of shares of our common stock which are the subject of the offering contemplated by this prospectus has been or will be made to the public in that Relevant Member State, except that with effect from and including the Relevant Implementation Date, an offer of such shares of our common stock may be made to the public in that Relevant Member State:

- to any legal entity which is a "qualified investor" as defined in the Prospectus Regulation;
- to fewer than 150, natural or legal persons (other than qualified investors as defined in the Prospectus Regulation), as permitted under the Prospectus Regulation, subject to obtaining the prior consent of the representatives of the underwriters; or
- in any other circumstances falling within Article 3(2) of the Prospectus Regulation, provided that no such offer of shares of our common stock shall require the company or any of the underwriters to publish a prospectus pursuant to Article 3 of the Prospectus Regulation or supplement a prospectus pursuant to Article 16 of the Prospectus Regulation.

For the purposes of this provision, the expression an "offer to the public" in relation to any shares of our common stock in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and the shares of our common stock to be offered so as to enable an investor to decide to purchase or subscribe the shares of our common stock, as the same may be varied in that Relevant Member State by any measure implementing the Prospectus Regulation in that Relevant Member State, and the expression "Prospectus Regulation" means Prospectus Regulation (EU) 2017/1129 (and amendments thereto, to the extent implemented in the Relevant Member States) and includes any relevant implementing measure in the Relevant Member State.

Notice to Prospective Investors in United Kingdom

In the United Kingdom, this document is being distributed only to, and is directed only at, and any offer subsequently made may only be directed at persons who are "qualified investors" (as defined in the Prospectus Regulation) (i) who have professional experience in matters relating to investments falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended, or the Order, and/or (ii) who are high net worth companies (or persons to whom it may otherwise be lawfully communicated) falling within Article 49(2)(a) to (d) of the Order (all such persons together being referred to as "relevant persons"). Any person in the United Kingdom that is not a relevant person should not act or rely on the information included in this document or use it as basis for taking any action. In the United Kingdom, any investment or investment activity that this document relates to may be made or taken exclusively by relevant persons. Any person in the United Kingdom that is not a relevant person should not act or rely on this document or any of its contents.

Notice to Prospective Investors in Bermuda

Securities may be offered or sold in Bermuda only in compliance with the provisions of the Investment Business Act of 2003 of Bermuda which regulates the sale of securities in Bermuda. Additionally, non-Bermudian persons (including companies) may not carry on or engage in any trade or business in Bermuda unless such persons are permitted to do so under applicable Bermuda legislation.

Notice to Prospective Investors in Australia

This prospectus is not a disclosure document for the purposes of Australia's Corporations Act 2001 (Cth) of Australia, or Corporations Act, has not been lodged with the Australian Securities & Investments Commission

and is only directed to the categories of exempt persons set out below. Accordingly, if you receive this prospectus in Australia, you confirm and warrant that you are either:

- a "sophisticated investor" under section 708(8)(a) or (b) of the Corporations Act;
- a "sophisticated investor" under section 708(8)(c) or (d) of the Corporations Act and that you have provided an accountant's certificate to the company which complies with the requirements of section 708(8)(c)(i) or (ii) of the Corporations Act and related regulations before the offer has been made;
- a person associated with the company under Section 708(12) of the Corporations Act; or
- a "professional investor" within the meaning of section 708(11)(a) or (b) of the Corporations Act.

To the extent that you are unable to confirm or warrant that you are an exempt sophisticated investor, associated person or professional investor under the Corporations Act any offer made to you under this prospectus is void and incapable of acceptance.

You warrant and agree that you will not offer any of the shares of our common stock issued to you pursuant to this prospectus for resale in Australia within 12 months of those shares of our common stock being issued unless any such resale offer is exempt from the requirement to issue a disclosure document under section 708 of the Corporations Act.

Notice to Prospective Investors in Hong Kong

No shares of our common stock have been offered or sold, and no shares of our common stock may be offered or sold, in Hong Kong, by means of any document, other than to persons whose ordinary business is to buy or sell shares or debentures, whether as principal or agent; or to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong and any rules made under that Ordinance; or in other circumstances which do not result in the document being a "prospectus" as defined in the Companies Ordinance (Cap. 32) of Hong Kong or which do not constitute an offer to the public within the meaning of the Companies Ordinance (Cap. 32) or the Securities and Futures Ordinance (Cap. 571) of Hong Kong. No document, invitation or advertisement relating to the shares of our common stock has been issued or may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere), which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted under the securities laws of Hong Kong) other than with respect to shares of our common stock which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong and any rules made under that Ordinance.

This prospectus has not been registered with the Registrar of Companies in Hong Kong. Accordingly, this prospectus may not be issued, circulated, or distributed in Hong Kong, and the shares of our common stock may not be offered for subscription to members of the public in Hong Kong. Each person acquiring the shares of our common stock will be required, and is deemed by the acquisition of the shares of our common stock, to confirm that he is aware of the restriction on offers of the shares of our common stock described in this prospectus and the relevant offering documents and that he is not acquiring, and has not been offered any shares of our common stock in circumstances that contravene any such restrictions.

Notice to Prospective Investors in Japan

The offering has not been and will not be registered under the Financial Instruments and Exchange Law of Japan (Law No. 25 of 1948 of Japan, as amended), or FIEL, and the underwriters will not offer or sell any shares of our common stock, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan (which term as used herein means, unless otherwise provided herein, any person resident in Japan, including any corporation or other entity organized under the laws of Japan), or to others for re-offering or resale, directly or indirectly, in

Japan or to or for the benefit of a resident of Japan, except pursuant to an exemption from S-30 the registration requirements of, and otherwise in compliance with, the FIEL and any other applicable laws, regulations and ministerial guidelines of Japan.

Notice to Prospective Investors in Singapore

This prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus and any other document or material in connection with the offer or sale, or the invitation for subscription or purchase, of the shares of our common stock may not be issued, circulated or distributed, nor may the shares of our common stock be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore, or the SFA, (ii) to a relevant person pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA and in accordance with the conditions specified in Section 275 of the SFA or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the shares of our common stock are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

- a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or
- a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

securities (as defined in Section 239(1) of the SFA) of that corporation or the beneficiaries‘ rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the shares of our common stock pursuant to an offer made under Section 275 of the SFA except:

- to an institutional investor or to a relevant person defined in Section 275(2) of the SFA, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;
- where no consideration is or will be given for the transfer;
- where the transfer is by operation of law;
- as specified in Section 276(7) of the SFA; or
- as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore.

Notice to Prospective Investors in Switzerland

The shares of our common stock may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange, or SIX, or on any other stock exchange or regulated trading facility in Switzerland. This prospectus has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this prospect supplement nor any other offering or marketing material relating to the shares of our common stock or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this prospectus nor any other offering or marketing material relating to the offering, the company, or the shares of our common stock have been or will be filed with or approved by any Swiss regulatory authority. In particular, this document will not be filed with and the offer of shares of our common stock will not be

supervised by, the Swiss Financial Market Supervisory Authority FINMA (FINMA) and the offer of shares of our common stock has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes, or CISA. The investor protection afforded to acquirers of interests in collective investment schemes under the CISA does not extend to acquirers of shares of our common stock.

Notice to Prospective Investors in Canada

(A) Resale Restrictions

The distribution of shares of our common stock in Canada is being made only in the provinces of Ontario, Quebec, Alberta, and British Columbia on a private placement basis exempt from the requirement that we prepare and file a prospectus with the securities regulatory authorities in each province where trades of these shares of our common stock are made. Any resale of the shares of our common stock in Canada must be made under applicable securities laws which may vary depending on the relevant jurisdiction, and which may require resales to be made under available statutory exemptions or under a discretionary exemption granted by the applicable Canadian securities regulatory authority. Purchasers are advised to seek legal advice prior to any resale of the shares of our common stock.

(B) Representations of Canadian Purchasers

By purchasing shares of our common stock in Canada and accepting delivery of a purchase confirmation, a purchaser is representing to us and the dealer from whom the purchase confirmation is received that:

- the purchaser is entitled under applicable provincial securities laws to purchase the shares of our common stock without the benefit of a prospectus qualified under those securities laws as it is an “accredited investor” as defined under National Instrument 45-106 — Prospectus Exemptions;
- the purchaser is a “permitted client” as defined in National Instrument 31-103 — Registration Requirements, Exemptions and Ongoing Registrant Obligations;
- where required by law, the purchaser is purchasing as principal and not as agent; and
- the purchaser has reviewed the text above under Resale Restrictions.

(C) Conflicts of Interest

Canadian purchasers are hereby notified that each of the underwriters are relying on the exemption set out in section 3A.3 or 3A.4, if applicable, of National Instrument 33-105 — Underwriting Conflicts from having to provide certain conflict of interest disclosure in this document.

(D) Statutory Rights of Action

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if the prospectus (including any amendment thereto) such as this document contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser’s province or territory. The purchaser of these securities in Canada should refer to any applicable provisions of the securities legislation of the purchaser’s province or territory for particulars of these rights or consult with a legal advisor.

(E) Enforcement of Legal Rights

All of our directors and officers as well as the experts named herein may be located outside of Canada and, as a result, it may not be possible for Canadian purchasers to effect service of process within Canada upon us or those persons. All or a substantial portion of our assets and the assets of those persons may be located outside of Canada and, as a result, it may not be possible to satisfy a judgment against us or those persons in Canada or to enforce a judgment obtained in Canadian courts against us or those persons outside of Canada.

(F) Taxation and Eligibility for Investment

Canadian purchasers of shares of our common stock should consult their own legal and tax advisors with respect to the tax consequences of an investment in the shares of our common stock in their particular circumstances and about the eligibility of the shares of our common stock for investment by the purchaser under relevant Canadian legislation.

LEGAL MATTERS

The validity of the shares of our common stock offered by this prospectus will be passed upon for us by Gibson, Dunn & Crutcher LLP, Irvine, California. Latham & Watkins LLP is acting as counsel for the underwriters.

EXPERTS

The consolidated financial statements of Progenity, Inc. as of December 31, 2018, and for the year then ended, have been included herein and in the registration statement in reliance upon the report of KPMG LLP, independent registered public accounting firm, appearing elsewhere herein, and upon the authority of said firm as experts in accounting and auditing. The audit report covering the December 31, 2018 consolidated financial statements contains an explanatory paragraph that states that the Company has suffered recurring losses from operations and has an accumulated deficit that raise substantial doubt about its ability to continue as a going concern. The consolidated financial statements do not include any adjustments that might result from the outcome of that uncertainty.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-1 under the Securities Act with respect to the shares of our common stock offered hereby. This prospectus, which constitutes a part of the registration statement, does not contain all of the information set forth in the registration statement, some items of which are contained in exhibits to the registration statement as permitted by the rules and regulations of the SEC. For further information with respect to us and our common stock, we refer you to the registration statement and its exhibits. Statements contained in this prospectus concerning the contents of any contract or any other document are not necessarily complete. If a contract or other document has been filed as an exhibit to the registration statement, please see the copy of the contract or other document that has been filed. Each statement in this prospectus relating to a contract or document filed as an exhibit is qualified in all respects by the filed exhibit. The exhibits to the registration statement should be reviewed for the complete contents of these contracts and documents. A copy of the registration statement and its exhibits may be obtained from the SEC upon the payment of fees prescribed by it. The SEC maintains a website at *www.sec.gov* that contains reports, proxy and information statements, and other information regarding companies that file electronically with it.

Upon completion of this offering, we will become subject to the information and periodic and current reporting requirements of the Exchange Act, and in accordance therewith, will file periodic and current reports, proxy statements and other information with the SEC. The registration statement, such periodic and current reports, and other information can be obtained electronically by means of the SEC's website at *www.sec.gov.*

PROGENITY, INC. AND SUBSIDIARIES
INDEX TO FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors
Progenity, Inc.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheet of Progenity, Inc. and subsidiaries (the Company) as of December 31, 2018, the related consolidated statement of operations, stockholders' equity (deficit), and cash flows for the year ended December 31, 2018, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018, and the results of its operations and its cash flows for the year ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.

Going Concern

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1 to the consolidated financial statements, the Company has suffered recurring losses from operations and has an accumulated deficit that raise substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 1. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB and in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audit included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audit provides a reasonable basis for our opinion.

/s/ KPMG LLP

We have served as the Company's auditor since 2011.

San Diego, California
August 27, 2019, except for earnings per share information and Note 13, as to which the date is December 19, 2019.

PROGENITY, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEET
(in thousands, except share data)

	As of December 31, 2018
ASSETS	
Current assets:	
Cash and cash equivalents	$ 49,005
Accounts receivable, net	1,952
Short-term investments	20,200
Inventory	7,616
Income tax receivable	6,194
Prepaid expenses and other current assets	3,979
Total current assets	88,946
Property and equipment, net	15,339
Other assets	194
Goodwill	6,219
Other intangible assets, net	5,699
Total assets	$ 116,397
LIABILITIES AND STOCKHOLDERS' DEFICIT	
Current liabilities:	
Accounts payable	$ 11,035
Accrued expenses and other current liabilities	65,793
Current portion of mortgages payable	231
Current portion of capital lease obligations	998
Total current liabilities	78,057
Capital lease obligations, net of current portion	893
Mortgages payable, net of current portion	3,320
Note payable to related party, net of unamortized discount of $7,705	67,295
Other long-term liabilities	3,800
Total liabilities	$ 153,365
Commitments and Contingencies (Note 7)	
Stockholders' deficit:	
Common stock—$0.001 par value. Authorized 250,000,000 shares; issued 50,120,357 shares; outstanding 28,654,265 shares	50
Series A and A-1 Preferred Stock—$0.001 par value. Authorized 6,120,000 shares; issued and outstanding, 5,620,000 shares	6
Series B Preferred Stock—$0.001 par value. Authorized 15,580,737 shares; issued and outstanding, 14,164,306 shares	14
Additional paid-in capital	124,202
Accumulated deficit	(142,469)
Treasury stock—at cost; 21,466,092 shares of common stock	(18,771)
Total stockholders' deficit	(36,968)
Total liabilities and stockholders' deficit	$ 116,397

See accompanying notes to consolidated financial statements.

PROGENITY, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENT OF OPERATIONS
(in thousands, except share and per share data)

	Year Ended December 31, 2018
Revenue	$ 127,974
Cost of sales	92,076
Gross profit	35,898
Operating expenses:	
Research and development	48,712
Selling and marketing	50,187
General and administrative	51,238
Total operating expenses	150,137
Loss from operations	(114,239)
Interest expense	(9,091)
Equity loss of equity method investee	(2,327)
Interest and other income, net	1,801
Loss before taxes	(123,856)
Income tax expense	5,250
Net loss	$ (129,106)
Net loss per share attributable to common stockholders, basic and diluted	$ (4.49)
Weighted average number of shares outstanding, basic and diluted	28,773,598
Pro forma loss per share, basic and diluted (unaudited)	$ (0.84)
Pro forma weighted average shares outstanding, basic and diluted (unaudited)	154,289,598

See accompanying notes to consolidated financial statements.

PROGENITY, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENT OF STOCKHOLDERS' EQUITY (DEFICIT)
(in thousands, except share data)

	Common Stock		Series A and A-1 Preferred Stock		Series B Preferred Stock		Additional paid-in capital	Accumulated Deficit	Treasury Stock		Total
	Shares	Amount	Shares	Amount	Shares	Amount			Common Shares	Amount	
Balance—December 31, 2017	49,048,488	$ 49	5,620,000	$ 6	14,164,306	$ 14	$ 121,481	$ (13,363)	(17,923,237)	$ (7,505)	$ 100,682
Exercise of stock options	1,071,869	1	—	—	—	—	458	—	—	—	459
Stock-based compensation	—	—	—	—	—	—	2,263	—	—	—	2,263
Repurchase of common shares	—	—	—	—	—	—	—	—	(3,542,855)	(11,266)	(11,266)
Net loss	—	—	—	—	—	—	—	(129,106)	—	—	(129,106)
Balance—December 31, 2018	50,120,357	$ 50	5,620,000	$ 6	14,164,306	$ 14	$ 124,202	$ (142,469)	(21,466,092)	$(18,771)	$ (36,968)

See accompanying notes to consolidated financial statements.

PROGENITY, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENT OF CASH FLOWS
(in thousands)

	Year Ended December 31, 2018
Cash flows from operating activities:	
Net loss	$ (129,106)
Adjustments to reconcile net loss to net cash by operating activities:	
Depreciation and amortization	6,073
Inventory write-down	880
Loss on disposal of property and equipment	31
Equity loss of equity method investee	2,327
Stock-based compensation expense	2,263
Deferred taxes, net	6,245
Changes in operating assets and liabilities:	
Accounts receivable, net	584
Inventory	(3,475)
Prepaid expenses and other current assets	(1,730)
Income tax receivable	(854)
Other assets	(32)
Accounts payable	5,770
Accrued expenses and other current liabilities	42,608
Other long-term liabilities	3,290
Net cash used in operating activities	(65,126)
Cash flows from investing activities:	
Purchases of property and equipment	(4,832)
Purchases of short-term investments	(167,011)
Proceeds from the sale of short-term investments	227,674
Net cash provided by investing activities	55,831
Cash flows from financing activities:	
Proceeds from issuance of common stock	459
Repurchase of common stock	(11,266)
Principal payments on mortgages payable	(220)
Principal payments on capital lease obligations	(1,530)
Payments for contingent consideration	(250)
Net cash used in financing activities	(12,807)
Net decrease in cash and cash equivalents	(22,102)
Cash and cash equivalents—beginning of year	71,107
Cash and cash equivalents—end of year	$ 49,005
Supplemental disclosure of cash flow information:	
Cash paid for interest	$ 7,618
Cash paid for income taxes	211
Supplemental schedule of noncash investing and financing activities:	
Purchases of property and equipment in accounts payable	$ 346
Capital lease obligations	706

See accompanying notes to consolidated financial statements.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Organization and Description of Business

Progenity, Inc. and subsidiaries (the "Company" or "Progenity"), a Delaware corporation, commenced operations in 2010 with its corporate office located in San Diego, California. Progenity's primary operations include a licensed Clinical License Improvement Amendment ("CLIA") and College of American Pathologists ("CAP") certified laboratory located in Michigan specializing in the molecular testing markets serving women's health providers in the obstetric, gynecological, fertility, and maternal fetal medicine specialty areas in the United States.

The Company has expertise in the national reference laboratory, clinical genetics, laboratory molecular testing, and biotechnology markets. Distribution is managed by a dedicated women's health physician sales force and a field operations team who support all logistical functions in receiving clinical samples at the laboratory for analysis.

The Company's core business is focused on the prenatal carrier screening and noninvasive prenatal test market, targeting preconception planning, and routine pregnancy management for genetic disease risk assessment.

Through its affiliation with Mattison Pathology, LLP ("Mattison"), a Texas limited liability partnership doing business as Avero Diagnostics ("Avero"), located in Lubbock and Dallas, Texas, the Company's operations have expanded to provide anatomic and molecular pathology testing products in the United States.

Liquidity

As of December 31, 2018, the Company had cash, cash equivalents, and short-term investments of $69.2 million and an accumulated deficit of $142.5 million. During the year ended December 31, 2018, the Company also had a net loss of $129.1 million and cash used in operations of $65.1 million. The Company's primary sources of capital have been private placements of preferred stock and incurrence of debt. As of December 31, 2018, the Company had a $75.0 million term loan outstanding with a private equity firm (see Note 5) and mortgages outstanding of $3.6 million (see Note 6). Management does not believe that the current available cash, cash equivalents, and short-term investments will be sufficient to fund the Company's planned expenditures and meet its obligations for at least 12 months following its financial statement issuance date without raising additional funding. As a result, there is substantial doubt about the Company's ability to continue as a going concern.

The Company's ability to continue as a going concern is dependent upon its ability to raise additional funding. Management intends to raise additional capital through equity offerings and/or debt financings. Adequate funding, if needed, may not be available to the Company on acceptable terms, or at all. If the Company is unable to raise capital when needed or on attractive terms, it would be forced to delay, reduce, or eliminate its research and development programs or other operations. If any of these events occur, the Company's ability to achieve its operational goals would be adversely affected.

2. Summary of Significant Accounting Policies

Basis of Presentation

The Company's financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America ("GAAP") and include the accounts of Progenity, Inc., its wholly owned subsidiaries, and an affiliated professional partnership with Avero, with respect to which the Company currently has a specific management arrangement. The term of the Company's agreement with Avero is 10 years, subject to automatic renewals. The agreement can be terminated by either party with a 90-day notice; however, a separate nominee agreement in place provides the Company the right, but not the obligation, to purchase, or to designate a person(s) to purchase, the stock of Avero at any time for a nominal amount. The Company receives a

management fee equal to the net operating income of Avero. The Company has determined that Avero is a variable interest entity and that the Company is the primary beneficiary resulting in the consolidation of Avero as required by the accounting guidance for consolidation. All significant intercompany balances and transactions have been eliminated in consolidation.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Significant items subject to such estimates include the estimate of discounts and allowances recorded against accounts receivable for differences between amounts billed and the estimated receipts from payors, accrual for reimbursement claims and settlements, the valuation of goodwill and intangible assets, assessing future tax exposure and the realization of deferred tax assets, the useful lives and recoverability of property and equipment, and the fair value of stock options. The Company bases these estimates on historical and anticipated results, trends, and various other assumptions that the Company believes are reasonable under the circumstances, including assumptions as to future events. These estimates form the basis for making judgments about the carrying values of assets and liabilities and recorded revenues and expenses that are not readily apparent from other sources. Actual results could differ from those estimates and assumptions.

Operating Segments

Operating segments are identified as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision maker or decision-making group in making decisions on how to allocate resources and assess performance. The Company views its operations and manages its business as one operating segment. All revenues are attributable to U.S.-based operations and all assets are held in the United States.

Revenue Recognition

Revenue is primarily derived from providing molecular testing products, which are reimbursed through arrangements with third-party payors, laboratory distribution partners, and amounts from individual patients. The Company bills for these products upon completion of the testing process. Third-party payors include commercial payors, such as health insurance companies, health maintenance organizations and government health benefit programs, such as Medicare and Medicaid. The Company assesses whether the price charged is fixed or determinable based on the nature of the transaction, whether there are existing contractual arrangements, and historical payment patterns and trends. When the Company does not have a sufficient history of collection and is not able to determine collectability, the Company recognizes revenues when cash is received. Otherwise, revenue is reported at net realizable value, which is billings net of expected adjustments for differences between amounts billed and estimated receipts. The estimated adjustments are determined based on historical collection trends, current economic conditions, and regulatory changes. Adjustments to the expected net realizable value of accounts receivable and revenue are recorded as an adjustment to revenue in the period of settlement or as information is received. In 2018, the Company experienced significant variability in payor reimbursement trends resulting in the conclusion that revenue is not fixed and determinable until cash is received for the majority of the Company’s molecular products. From time to time, the Company receives requests for refunds of payments previously made for molecular products testing. The Company has established an accrued liability for potential refund requests based on historical experience.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Payor Concentration

Substantially all of the Company's revenue is from third-party payors, when collection can be reasonably estimated, at net realizable value.

	Percentage of Revenue Year Ended December 31, 2018
Government Health Benefits Programs	23.0%
Blue Shield of Texas	19.2%

Cost of Sales

The components of the Company's cost of sales are materials and service costs, personnel costs, including stock-based compensation expense, equipment, and infrastructure expenses associated with processing blood and other samples, quality control analyses, shipping charges to transport samples and specimens from ordering physicians, clinics or individuals, third-party laboratory testing products, and allocated overhead including rent, information technology costs, equipment depreciation, and utilities. Costs associated with performing tests are recorded when the test is processed regardless of whether and when revenues are recognized with respect to such test.

Cash and Cash Equivalents including Concentration of Credit Risk

The Company considers all highly liquid investment instruments purchased with an initial maturity of three months or less to be cash equivalents. The Company limits its exposure to credit loss by placing its cash and cash equivalents in financial institutions with high credit ratings. The Company's cash and cash equivalents may consist of deposits held with banks, money market funds, or other highly liquid investments that may at times exceed federally insured limits. Cash equivalents are financial instruments that potentially subject the Company to concentrations of risk, to the extent of amounts recorded in the balance sheets. The Company performs evaluations of its cash equivalents and the relative credit standing of these financial institutions and limits the amount of credit exposure with any one institution. Management believes that the Company is not exposed to significant credit risk due to the financial position of the depository institutions in which those deposits are held.

Investments

All investments have been classified as "available-for-sale" and are carried at fair value as determined based upon quoted market prices or pricing models for similar securities at period end. Investments with contractual maturities less than 12 months at the balance sheet date are considered short-term investments. Those investments with contractual maturities 12 months or greater at the balance sheet date are considered long-term investments. A decline in the fair value of any security below cost that is deemed other than temporary results in a charge to earnings and the corresponding establishment of a new cost basis for the security. Dividend and interest income are recognized when earned. Realized gains and losses are included in earnings and are derived using the specific identification method for determining the cost of the securities sold.

Inventory

Inventory is stated at lower of cost (first-in, first-out method) or net realizable value. Inventory consists entirely of supplies, which are consumed when the Company is providing its test reports, and therefore the Company does not maintain any work in process or finished goods inventory. The Company reviews its inventory on a regular basis for excess and obsolete inventory based on an estimate for future consumption. Write-downs or losses of inventory are generally due to technological advances or new product introductions in the Company's laboratory

testing products. The Company believes that the estimate used in calculating the inventory provision are reasonable and properly reflect the risk of excess and obsolete inventory. If laboratory operation demand is significantly less than inventory levels, inventory write-downs may be required, which could have a material adverse effect on the Company's consolidated financial statements. Provisions for excess and obsolete costs amounted to $0.9 million in 2018.

Property and Equipment, Net

Property and equipment are stated at cost. Assets acquired under capital leases are stated at the present value of future minimum lease payments. Depreciation is recognized on a straight-line basis over the estimated useful lives of the related assets as follows:

Property and Equipment	Estimated Useful Life (in years)
Computers and software	3
Laboratory equipment	5
Furniture, fixtures, and office equipment	8
Building	15

Assets acquired under capital leases and leasehold improvements are amortized on a straight-line basis over the shorter of the lease term or the useful life of the asset. Land is not depreciated.

Goodwill

Goodwill is an asset representing the future economic benefits arising from other assets acquired in a business combination that are not individually identified and separately recognized. Goodwill is not amortized but instead is tested annually for impairment at the reporting unit level, or more frequently when events or changes in circumstances indicate that fair value of the reporting unit has been reduced to less than its carrying value. The Company may choose to perform a qualitative assessment to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount as a basis for determining whether it is necessary to perform the two-step goodwill impairment test.

If, after assessing qualitative factors, an entity determines it is not more likely than not that the fair value of a reporting unit is less than its carrying amount, then performing the two-step impairment test is unnecessary. If deemed necessary, a two-step test is used to identify the potential impairment and to measure the amount of goodwill impairment, if any. The first step is to compare the fair value of the reporting unit with its carrying amount, including goodwill. If the fair value of the reporting unit exceeds its carrying amount, goodwill is considered not impaired; otherwise, there is an indication that goodwill may be impaired and the amount of the loss, if any, is measured by performing step two. Under step two, the impairment loss, if any, is measured by comparing the implied fair value of the reporting unit goodwill with the carrying amount of goodwill. No impairment was recorded for the year ended December 31, 2018.

Intangible Assets

Intangible assets consist of identifiable intangible assets acquired through acquisitions. Identifiable intangible assets include payor relationships, trade names, and noncompete agreements. The Company amortizes payor relationships and trade names using the straight-line method over their useful lives. The Company amortizes noncompete covenants using the straight-line method over the terms of the related agreements. The Company reviews impairment for intangible assets with definite useful lives whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. Recoverability of these assets is measured by a comparison of the carrying amounts to the undiscounted future cash flows the assets are expected to generate. If

such review indicates that the carrying amount of intangible assets is not recoverable, the carrying amount of such assets is reduced to fair value. No impairment was recorded for the year ended December 31, 2018.

The amortization periods for the acquired intangible assets are:

Intangible Assets	Useful Life (in years)
Trade names	10
Payor relationships	10
Noncompete agreements	6

Impairment of Long-Lived Assets

The Company accounts for the impairment of long-lived assets, such as property and equipment, by reviewing these assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. If circumstances require a long-lived asset or asset group to be tested for possible impairment, the Company first compares undiscounted future cash flows expected to be generated by that asset or asset group to its carrying value. If the carrying value of the long-lived asset or asset group is not recoverable on an undiscounted-cash-flow basis, an impairment is recognized to the extent that the carrying value exceeds its fair value. No impairment was recorded as of December 31, 2018.

Repair and Maintenance

The Company incurs maintenance costs on its major equipment. Repair and maintenance costs are expensed as incurred.

Research and Development

Research and development expenses consist primarily of costs associated with performing research and development activities to improve the Company’s tests, to reduce costs, and to develop new products. Research and development expenses also consist of personnel expenses, including salaries, bonuses, stock-based compensation expense, and benefits, and allocated overhead costs. Research and development expenses are expensed as incurred.

Selling and Marketing

Selling and marketing expenses consist primarily of costs for communication, advertising, conferences, and other marketing events. Selling and marketing expenses also consist of personnel expenses, including salaries, bonuses, stock-based compensation expense, benefits, and allocated overhead costs. Selling and marketing expenses are expensed as incurred. Advertising expense for the year ended December 31, 2018 amounted to $1.4 million.

General and Administrative

General and administrative expenses consist primarily of personnel costs, including salaries, bonuses, stock-based compensation expense, and benefits, for the Company’s finance and accounting, legal, human resources, and other administrative teams. Additionally, these expenses include professional fees, including audit, legal, and recruiting services. General and administrative expenses are expensed in the period incurred.

Stock-Based Compensation

The Company calculates the fair value of stock options using the Black-Scholes option valuation model, which incorporates various assumptions including volatility, expected life and risk-free interest rate. Compensation

related to service-based awards are recognized starting on the grant date on a straight-line basis over the vesting period, which is generally four years.

The determination of the fair value of each stock award using this option-pricing model is affected by the Company's assumptions regarding a number of complex and subjective variables. These variables include, but are not limited to, the fair value of the common stock at the date of grant, the expected term of the awards, the expected stock price volatility over the term of the awards, risk-free interest rate, and dividend rate as follows:

Fair Value of Common Stock—Given the absence of a public trading market, the Company's board of directors considered numerous objective and subjective factors to determine the fair value of the Company's common stock at each grant date. These factors included, but were not limited to: (i) contemporaneous third-party valuations of common stock; (ii) the prices for preferred stock sold to outside investors; (iii) the rights and preferences of preferred stock relative to common stock; (iv) the lack of marketability of the Company's common stock; (v) developments in the business; and (vi) the likelihood of achieving a liquidity event, such as an initial public offering ("IPO") or sale of the business, given prevailing market conditions.

Expected Term—The expected term represents the period that the stock-based awards are expected to be outstanding. The Company determines the expected term using the simplified method. The simplified method deems the term to be the average of the time-to-vesting and the contractual life of the options. For stock options granted to non-employees, the expected term equals the remaining contractual term of the option from the vesting date.

Expected Volatility—Given the absence of a public trading market, the expected volatility was estimated by taking the average historic price volatility for industry peers, consisting of several public companies in the Company's industry that are either similar in size, stage, or financial leverage, over a period equivalent to the expected term of the awards.

Risk-Free Interest Rate—The risk-free interest rate is calculated using the average of the published interest rates of U.S. Treasury zero-coupon issues with maturities that are commensurate with the expected term.

Dividend Rate—The dividend yield assumption is zero, as the Company has no plans to make dividend payments.

Effective January 1, 2018, the Company adopted the guidance from Accounting Standards Update ("ASU") No. 2016-09, *Compensation—Stock Compensation (Topic 718).* As a result, the Company now recognizes the effect of forfeitures as they occur. Additionally, the tax consequences of stock option exercises are recorded in income tax expense in the reporting period the exercises occur.

Net Loss Per Share

Basic and diluted net loss per share attributable to common stockholders is presented in conformity with the two-class method required for participating securities. The Company considers all series of preferred stock to be participating securities as the holders of such stock are entitled to receive non-cumulative dividends on an as-converted basis in the event that a dividend is paid on common stock. Under the two-class method, the net loss attributable to common stockholders is not allocated to the preferred stock as the holders of preferred stock do not have a contractual obligation to share in the Company's losses. Under the two-class method, net income is attributed to common stockholders and participating securities based on their participation rights.

Basic net loss per share attributable to common stockholders is computed by dividing the net loss attributable to common stockholders by the weighted average number of shares of common stock outstanding during the period. Net loss attributable to common stockholders is calculated by adjusting net loss with dividends, if any. As the Company has reported net losses for the period presented, all potentially dilutive securities are antidilutive and, accordingly, basic net loss per share equals diluted net loss per share.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Equity Method Investment

Investments over which the Company is deemed to exert significant influence but not control are accounted for using the equity method of accounting. For investments accounted for under the equity method of accounting, the Company's share of income (losses) is included in equity in income of investees in the consolidated statements of operations. As of December 31, 2018 the Company owned a 20% interest in NeoSeq Ltd., a Cayman Islands exempted company ("NeoSeq") which operates a laboratory in China focused on fetal diagnostic operations for the Asia Pacific market and certain Middle Eastern countries. The Company evaluates the equity method investment for impairment whenever an event or change in circumstances occurs that may have a significant adverse impact on the carrying value of the investment. During 2018, NeoSeq completed a financing transaction that diluted the Company's ownership in NeoSeq. Due to the financing transaction and continued losses, the Company recorded an other-than-temporary impairment of $1.4 million within the equity loss of the equity method investee in the accompanying consolidated statement of operations.

Income Taxes

The Company accounts for income taxes under the asset-and-liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax basis and operating loss and tax credit carryforwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date.

The Company recognizes the effect of income tax positions only if those positions are more likely than not of being sustained. Recognized income tax positions are measured at the largest amount that is greater than 50% likely of being realized. Changes in recognition or measurement are recognized in the period in which the change in judgment occurs. Valuation allowances are established, when necessary, to reduce deferred tax assets to the amount expected to be realized.

Comprehensive Loss

The Company did not have any other comprehensive income or loss in the period presented, and therefore comprehensive loss was the same as the Company's net loss.

Unaudited Pro Forma Information

All outstanding shares of preferred stock will automatically convert into shares of the Company's common stock upon the closing of a qualified IPO, as defined in the Company's certificate of incorporation and as described in Note 8. The unaudited pro forma balance sheet information as December 31, 2018 has been prepared assuming the automatic conversion of the preferred stock into shares of common stock assuming the completion of an IPO on December 31, 2018.

The unaudited pro forma net loss per share attributable to common stockholders for the year ended December 31, 2018 has been computed to give effect to the automatic conversion upon the closing of a qualified IPO of preferred stock into common stock using the if-converted method as though such IPO had occurred as of the beginning of the period or the date of issuance, if later.

Recently Issued Accounting Standards

In August 2015, the Financial Accounting Standards Board ("FASB") issued ASU No. 2015-14, *Revenue from Contracts with Customers (Topic 606): Deferral of the Effective Date*. ASU No. 2015-14 is an amendment to

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

ASU No. 2014-09. The amendment in this update defers the effective date of ASU No. 2014-09 for all entities by one year. ASU No. 2014-09 established new revenue recognition guidance for all entities and is applicable for private companies for annual reporting periods beginning after December 15, 2018. Early adoption was permitted for all other entities beginning after December 15, 2016.

In January 2019, the Company adopted ASU No. 2014-09, ("ASC 606"), using the modified retrospective method approach. Under this approach, the Company adopted ASC 606 as of January 1, 2019 without recasting prior period amounts by recording the cumulative effect of applying ASC 606 to the opening balance of equity. ASC 606 provides guidance on recognizing revenue, including a five-step model to determine when revenue recognition is appropriate. The standard requires that an entity recognize revenue based on transfer of control of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. In connection with the adoption of ASC 606, the Company anticipates recording an increase in accounts receivable representing estimated variable consideration expected to be received from the Company's third-party payors. These revenues have historically been recorded as cash was received due to the conclusion that they were not fixed and determinable.

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)*. The new leasing standard will generally require lessees to record a right-of-use asset and a lease liability on the balance sheet for all leases longer than 12 months. The new standard is effective for the Company for annual reporting periods beginning after December 15, 2019. The Company is still assessing the impact that the new leasing standard will have on its operations and financial position.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments—Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*, which requires the measurement of expected credit losses for financial instruments carried at amortized cost, such as accounts receivable, held at the reporting date based on historical experience, current conditions and reasonable forecasts. The main objective of this standard is to provide financial statement users with more decision-useful information about the expected credit losses on financial instruments and other commitments to extend credit held by a reporting entity at each reporting date. In November 2018, the FASB issued ASU No. 2018-19, *Codification Improvements to Topic 326, Financing Instruments–Credit Losses*, which included an amendment of the effective date for nonpublic entities. The new standard is effective for the Company for annual reporting periods beginning after December 15, 2021. The Company does not believe the adoption of this standard will have a significant impact on the financial statements.

In August 2016, the FASB issued ASU No. 2016-15, *Statement of Cash Flows (Topic 230)*: *Classification of Certain Cash Receipts and Cash Payments*. This standard is intended to address eight classification issues related to the statement of cash flows to reduce diversity in practice in how certain transactions are classified. This standard is effective for the Company for annual reporting periods beginning after December 15, 2018. This standard requires adoption based upon a retrospective transition method. The Company is still assessing the impact of this standard but does not believe it will have a material impact on the classification of cash flows within its statement of cash flows.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

3. Balance Sheet Components

Prepaid expenses and other current assets

Prepaid expenses and other current assets consist of the following (in thousands):

	December 31, 2018
Prepaid expenses	$ 3,375
Other current assets	604
Total	$ 3,979

Property and equipment, net

Property and equipment, net consist of the following (in thousands):

	December 31, 2018
Computers and software	$ 12,659
Building and leasehold improvements	9,198
Laboratory equipment	4,324
Furniture, fixtures, and office equipment	1,422
Construction in progress	761
Land	1,091
Total property and equipment	29,455
Less accumulated depreciation and amortization	(14,116)
Property and equipment, net	$ 15,339

Capital leases included in property and equipment, net consist of the following (in thousands):

	December 31, 2018
Capital leases	$ 5,114
Less accumulated depreciation and amortization	(2,589)
Property and equipment, net	$ 2,525

Depreciation and amortization of property and equipment, including capital leases, was $3.7 million for the year ended December 31, 2018.

Intangible assets, net

Intangible assets, net consist of the following as of December 31, 2018 (in thousands):

	December 31, 2018		
	Cost	Accumulated amortization	Net
Payor relationships	$7,230	$ (2,590)	$4,640
Trade names	1,410	(505)	905
Noncompete agreements	384	(230)	154
Intangible assets, net	$9,024	$ (3,325)	$5,699

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Amortization expense of intangible assets for the year ended December 31, 2018 was $0.9 million.

Estimate future amortization expense of the intangible assets at December 31, 2018 is (in thousands):

Year Ending December 31,	
2019	$ 928
2020	928
2021	891
2022	864
2023	864
Thereafter	1,224
Total future minimum amortization	$5,699

Accrued expenses and other current liabilities

Accrued expenses and other current liabilities consist of the following (in thousands):

	December 31, 2018
Accrual for reimbursement claims and settlements	$ 46,405
Commissions and bonus	6,628
Vacation and payroll benefits	4,840
Accrued professional services	3,146
Other	4,774
Total	$ 65,793

Other long-term liabilities

Other long-term liabilities consist of the following (in thousands):

	December 31, 2018
Accrual for reimbursement claims and settlements—long-term	$ 3,000
Other	800
Total	$ 3,800

4. Fair Value Measurements

Fair value represents the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants on the measurement date. When determining fair value, the Company considers the principal or most advantageous market in which the Company would conduct a transaction, in addition to the assumptions that market participants would use when pricing the related assets or liabilities, including nonperformance risk.

A three-level hierarchy prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1

measurements) and the lowest priority to measurements involving significant unobservable inputs (Level 3 measurements). The three levels of the fair value hierarchy are as follows:

Level 1—Quoted prices (unadjusted) in active markets for identical assets or liabilities that the Company has the ability to access at the measurement date

Level 2—Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly

Level 3—Unobservable inputs for the asset or liability

The following table presents information about the Company's assets and liabilities that are measured at fair value on a recurring basis and indicates the fair value hierarchy of the valuation techniques utilized to determine such fair value (in thousands):

At December 31, 2018	Quoted Market Prices for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Money market funds(1)	$ 10,217	$ —	$ —
Certificate of deposits(1)(2)	—	51,415	—

(1) Included in cash and cash equivalents in the accompanying consolidated balance sheet.
(2) Included in short-term investments in the accompanying consolidated balance sheet.

Short-term investment, which consists of a certificate of deposit with a maturity of 12 months or less, is classified as a Level 2 financial asset because it is valued using quoted market price and other observable inputs in active markets for identical securities.

There were no significant transfers between Level 1 and Level 2 during the year ended December 31, 2018. The Company's policy is to recognize transfers between levels at the end of the reporting period.

The Company recorded a non-recurring Level 3 fair value measurement on its investment in NeoSeq that resulted in an impairment loss of $1.4 million discussed in Note 2 "Equity Method Investment".

Fair Value of Financial Instruments

The carrying value of the Company's accounts receivable, income tax receivable, accounts payable, and accrued expenses and other current liabilities are considered to be representative of their respective fair values because of their short-term nature.

The carrying value of the Company's mortgages payable approximates their estimated fair value because the instruments bear interest at rates and have terms that are comparable to those available to the Company for similar loan instruments at December 31, 2018.

The carrying value of the Company's note payable to a related party does not approximate its fair value because the instrument bears interest at a rate that is not comparable to those available to the Company for a similar loan instrument at December 31, 2018. The carrying value and the fair value of the Company's term loan (the "2017 Term Loan") is $75.0 million and $76.7 million, respectively, at December 31, 2018. The carrying value of the 2017 Term Loan is presented on the accompanying consolidated balance sheet net of discount on the note and debt issuance cost.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

5. Note Payable to Related Party

On October 27, 2017, the Company entered into a Credit and Security Agreement and a Series B Preferred Stock Purchase Agreement with a private equity firm (the "2017 Transaction"). The 2017 Transaction provided for the 2017 Term Loan, the issuance of Series B Preferred Stock (the "Series B Preferred Stock"), and the issuance of a warrant to purchase Series B Preferred Stock (the "Series B Preferred Stock Purchase Warrant"). The 2017 Term Loan accrues interest at a rate per annum equal to 9.5% and is due October 27, 2022.

The 2017 Term Loan contains customary covenants, including a requirement to maintain a minimum unrestricted cash balance at all times at least equal to $5.0 million. The Company is in compliance with the 2017 Term Loan covenants. The 2017 Term Loan is secured by all tangible and intangible property and assets of the Company, with the exception of intellectual property.

The total proceeds of $124.2 million from the 2017 Transaction were allocated to the 2017 Term Loan, Series B Preferred Stock, and Series B Preferred Stock Purchase Warrant based on the relative fair value of the term loan, equity, and warrant issued. As a result, the Company allocated proceeds of $65.7 million to the 2017 Term Loan. As the amount of proceeds allocated to the 2017 Term Loan are lower than the stated loan amount of $75.0 million, the resulting $9.3 million discount will be amortized to interest expense using the effective interest method over the term of the loan.

During 2018, the Company recognized interest expense on the 2017 Term Loan of $8.7 million, inclusive of $1.5 million of amortized interest expense on the discount. As of December 31, 2018 the unamortized discount on the 2017 Term Loan was $7.7 million.

As of December 31, 2018, the minimum principal payment under the note payable is $75.0 million, due in October 2022.

6. Mortgages Payable

On January 24, 2014, the Company executed a mortgage with Comerica Bank, Inc. for $1.8 million for the purpose of acquiring property located in Ann Arbor, Michigan, which was previously leased by the Company and is used primarily for laboratory testing and research purposes. The outstanding balance as of December 31, 2018 was $1.5 million. The mortgage matures in 2024 and requires monthly principal and interest payments at a fixed interest rate of 2.94% plus a floating rate at London Interbank Offered Rate ("LIBOR").

The Company also has a mortgage with American Bank of Commerce (originally executed on February 19, 2008) outstanding on Avero's property located in Lubbock, Texas, which is used primarily for laboratory testing. The outstanding balance as of December 31, 2018 was $2.1 million. The mortgage matures in 2029 and requires monthly principal and interest payments at an interest rate of 4.25%.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

As of December 31, 2018, the minimum principal payments under the mortgages payable are as follows (in thousands):

Year Ending December 31,	Minimum Mortgages Payable Payments
2019	$ 231
2020	241
2021	253
2022	265
2023 and thereafter	2,561
Total future minimum payments	$ 3,551
Less current portion of mortgages payable	(231)
Mortgages payable, net of current portion	$ 3,320

7. Commitments and Contingencies

Operating Leases

The Company has several noncancelable operating leases, primarily for office space, laboratory space, and vehicles, which expire over the next 3 to 5 years. Minimum rent payments under operating leases are recognized on a straight-line basis over the term of the lease. Rent expense for operating leases for the year ended December 31, 2018 was $7.1 million.

The minimum future operating lease payments for the Company’s noncancelable operating leases at December 31, 2018 are as follows (in thousands):

Year Ending December 31,	Minimum Operating Lease Payments
2019	$ 6,575
2020	4,130
2021	2,277
2022	690
Total future minimum payments	$ 13,672

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Capital Leases

The Company leases equipment under capital leases. The outstanding leases have a weighted average imputed interest rate of 5.27% per annum. Future minimum payments due as of December 31, 2018 under such capital leases are as follows (in thousands):

Year Ending December 31,	Minimum Capital Lease Payments
2019	$ 1,086
2020	684
2021	251
Total minimum lease payments	$ 2,021
Less amount representing interest	(130)
Present value of minimum capital lease payments	$ 1,891
Less current portion of capital lease obligations	(998)
Capital lease obligations, net of current portion	$ 893

Contingencies

The Company, in the ordinary course of its business, can be involved in lawsuits, threats of litigation, and audit and investigative demands from third parties. While management is unable to predict the exact outcome of such matters, it is management's current belief that any potential liabilities resulting from these contingencies, individually or in the aggregate, could have a material impact on the Company's financial position and results of operations.

The regulations governing government reimbursement programs (e.g., Medicaid, Tricare, and Medicare) and commercial payor reimbursement programs are complex and subject to interpretation. As a provider of services to patients covered under government and commercial payor programs, post-payment review audits, and other forms of reviews and investigations are routine. The Company believes it complies in all material respects with the statutes, regulations, and other requirements applicable to its laboratory operations.

In April 2018, the Company received a civil investigative demand from an Assistant U.S. Attorney ("AUSA") for the Southern District of New York and a Health Insurance Portability and Accountability Act ("HIPAA") subpoena issued by an AUSA for the Southern District of California. In May 2018, the Company received a subpoena from the State of New York Medicaid Fraud Control Unit. While the Company has not been served with a civil or criminal complaint, it is currently under federal civil and criminal investigations, and state civil investigations, regarding discontinued legacy billing practices for its non-invasive prenatal testing ("NIPT") and microdeletion tests and for the provision of potential kickbacks or inducements to physicians and patients. The civil investigations also include inquiries about the Company's laboratory licenses, its enrollment in state Medicaid programs, and the laboratories that performed testing for the Company.

So far, the Company has received subpoenas to produce documents and to respond to interrogatories and has not been served with a complaint; accordingly, the Company is unable to predict the outcome and is unable to make a meaningful estimate of the amount or range of loss, if any, that could result from any unfavorable outcome. If the Company is served with a complaint, an adverse ruling or a settlement in this proceeding could require the Company to pay treble damages, civil and/or criminal penalties, and attorneys' fees, costs and expenses, which could materially and adversely affect the Company's business, financial condition, and results of operations.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

On June 21, 2018, the Company received a letter from Cigna alleging damages related to violations of contract terms. On December 5, 2018, Cigna and the Company entered into a settlement agreement whereby Avero agreed to pay an aggregate amount of $12.0 million with an upfront payment of $6.0 million and the remaining $6.0 million to be paid over 24 months. For the year ended December 31, 2018, the Company recorded a charge of $12.0 million associated with this claim in its consolidated statements of operations as a reduction to revenue based on its best estimate of the anticipated resolution of this matter.

On June 25, 2018, the Company received a letter from Aetna's external legal counsel that included various allegations relating to the Company's past practices. In August 2019, the Company and Aetna reached a mutual verbal understanding to settle the matter for $15.0 million. For the year ended December 31, 2018, the Company recorded a charge of $15.0 million associated with this claim in its consolidated statements of operations as a reduction to revenue based on its best estimate of the anticipated resolution of this matter.

On October 18, 2018, the Company received a letter from UnitedHealth Group ("UHC") that included various allegations relating to the Company's past practices. In August 2019, the Company offered UHC $27.0 million to resolve all UHC's allegations. The Company and UHC continue to discuss resolution of the foregoing matters. For the year ended December 31, 2018, the Company recorded a charge of $27.0 million associated with this claim in its consolidated statements of operations as a reduction to revenue based on its best estimate of the anticipated resolution of this matter.

8. Stockholders' Equity

Common Stock

The Company's certificate of incorporation provides for the authorization to issue 250 million shares of common stock. Each holder of common stock is entitled to one vote per share of common stock held.

Treasury Stock

In June 2014, the Company authorized an Equity Repurchase Program for Key Employees (the "Repurchase Program"). The Repurchase Program allows the Company to repurchase for cash a portion of common stock equity interest of certain employees, provided that (i) no more than 25% of the equity interest of any employee shall be repurchased under the Repurchase Program, (ii) the purchase price to be paid for each share of common stock shall equal the most recent appraisal valuation of the Company's common stock, and (iii) the aggregate repurchases shall not exceed the lesser of (a) equity interest representing, in the aggregate, 5.0 million shares of common stock, (b) a purchase price, in the aggregate, of more than $6.0 million, and (c) the maximum repurchases permitted under the General Corporation Law of the State of Delaware. In addition, it is the Company's practice to require individuals exercising stock options to hold the shares upon exercising for a reasonable period of time in order for the holder to be exposed to the economic risks and rewards of share ownership prior to participating in the Repurchase Program. A reasonable period of time is defined as a period of at least six months and that covers at least two common stock appraisal valuations.

On December 19, 2017, the Company extended the offer to certain key employees to repurchase up to 3.6 million shares in aggregate at a price of $3.53 per share of Company's common stock. In February 2018, the Company completed the offer and paid an aggregate of $12.5 million to repurchase 3.5 million shares of Company's common stock. At the time of repurchase, the Company's common stock was appraised at $3.18 per share which resulted in a recording of $11.3 million as treasury stock. The difference of $1.2 million was recorded as stock-based compensation expense.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Preferred Stock

The Company's certificate of incorporation authorizes 25.8 million shares of preferred stock, with 4.1 million shares designated as Series A Preferred Stock, 2.0 million shares designated as Series A-1 Preferred Stock, and 15.6 million shares designated as Series B Preferred Stock.

As of December 31, 2018, there were 4.1 million shares of Series A Preferred Stock outstanding, 1.5 million shares of Series A-1 Preferred Stock outstanding and 14.2 million shares of Series B Preferred Stock outstanding. Each share of outstanding preferred stock is convertible, at the option of the holder, into a number of fully paid and nonassessable shares of common stock as determined by dividing the original issue price (the "Original Issue Price") of $0.48543, $9.00, or $3.53 for the Series A Preferred Stock, Series A-1 Preferred Stock, or Series B Preferred Stock, respectively, by the conversion price in effect at the time of conversion (such quotient, the "Conversion Rate"). The initial conversion price per share of Series A Preferred Stock is $0.0245, the initial conversion price per share of Series A-1 Preferred Stock is $0.4542365, and the initial conversion price per share of Series B Preferred Stock is $3.53. The initial conversion price per share is subject to adjustment as set forth in the certificate of incorporation.

Each series of outstanding preferred stock will automatically convert to shares of common stock at the applicable Conversion Rate upon the earlier of either (i) the closing of a registered underwritten public offering of common stock, the public offering price of which is not less than $3.53 per share (subject to adjustment as set forth in the certificate of incorporation), which results in aggregate proceeds to the Company of at least $50.0 million (net of underwriting discounts and commissions) or (ii) the consent or agreement of holders of 75% of the then-outstanding shares of such series of preferred stock.

In the event of any liquidation, dissolution, or winding-up of the Company, either voluntary or involuntary, the holders of Series B Preferred Stock are entitled to receive, prior and in preference to any distribution of any of the assets of the Company to the holders of common stock, Series A Preferred Stock, and Series A-1 Preferred Stock by reason of their ownership thereof, an amount per share equal to the sum of the Series B Original Issue Price (as adjusted for stock splits, stock dividends, reclassification, or the like with respect to such series of preferred stock), plus declared but unpaid dividends on such share (the "Series B Preference Amount"). If, upon the occurrence of any such liquidation, dissolution, or winding-up, the assets and funds thus distributed among the holders of the Series B Preferred Stock shall be insufficient to permit the payment to such holders of the full Series B Preference Amount, the entire assets and funds of the Company legally available for distribution shall be distributed ratably among the holders of the Series B Preferred Stock in proportion to the preferential amount each such holder would otherwise be entitled to receive upon such distribution if the full Series B Preference Amount with respect to such holder's shares were paid.

In the event of any liquidation, dissolution, or winding-up of the Company, either voluntary or involuntary, after completion of distribution to the holders of the Series B Preferred Stock of the Series B Preference Amount for each of their shares of Series B Preferred Stock, the holders of Series A Preferred Stock are entitled to receive, prior and in preference to any distribution of any of the assets of the Company to the holders of common stock by reason of their ownership thereof, an amount per share equal to the sum of the Series A Original Issue Price (as adjusted for stock splits, stock dividends, reclassification, or the like with respect to such series of preferred stock), plus declared but unpaid dividends on such share (the "Series A Preference Amount").

In the event of any liquidation, dissolution, or winding-up of the Company, either voluntary or involuntary, after completion of distribution to the holders of the Series B Preferred Stock of the Series B Preference Amount for each of their shares of Series B Preferred Stock, the holders of Series A-1 Preferred Stock are entitled to receive, prior and in preference to any distribution of any of the assets of the Company to the holders of common stock by

reason of their ownership thereof, an amount per share equal to the greater of (i) the sum of the Series A-1 Original Issue Price (as adjusted for stock splits, stock dividends, reclassification, or the like with respect to such series of preferred stock), plus declared but unpaid dividends on such share and (ii) such amount per share as would have been payable had all shares of Series A-1 Preferred Stock been converted to common stock (assuming for such purpose that all then outstanding shares of Series A Preferred Stock had also been converted to common stock) immediately prior to such liquidation, dissolution, or winding-up (the "Series A-1 Preference Amount").

The Series A Preference Amount and the Series A-1 Preference Amount shall be paid on a *pari passu* basis. If, upon the occurrence of any such liquidation, dissolution, or winding-up, the assets and funds thus distributed among the holders of the Series A Preferred Stock and the Series A-1 Preferred Stock shall be insufficient to permit the payment to such holders of the full Series A Preference Amount and Series A-1 Preference Amount, as applicable, the entire remaining assets and funds of the Company legally available for distribution shall be distributed ratably among the holders of the Series A Preferred Stock and Series A-1 Preferred Stock, with each such holder receiving the same proportion of the preferential amount each such holder would otherwise be entitled to receive upon such distribution if the full preference amount with respect to such holder's shares was paid.

The Company cannot declare, pay or set aside any dividends on shares of common stock (other than dividends on shares of common stock payable in shares of common stock) unless the holders of the preferred stock then outstanding simultaneously receive a dividend on each outstanding share of preferred stock in an amount equal to that dividend per share of preferred stock as would equal the product of (i) the dividend payable on each share of common stock and (ii) the number of shares of common stock then issuable upon conversion of such share of preferred stock.

During 2018, the Company did not declare dividends.

9. Stock Incentive Plan and Stock-based Compensation

Stock Incentive Plan

In 2012, the Company adopted the 2012 Stock Option and Grant Plan, replacing the 2011 stock option plan, which provides for the granting of incentive and nonstatutory common stock options and stock-based incentive awards to officers, employees, directors, consultants, and independent contractors. Incentive stock options are granted at exercise prices not less than 100% of the estimated fair market value of the underlying common stock at date of grant. Options granted under the Company's plan vest over four years. Generally, 25% of the options vest upon the one-year anniversary with the remaining 75% vesting monthly thereafter over the remaining three years. During 2013, the Plan was amended to the Second Amended and Restated Progenity, Inc. Stock Plan (the "2012 Plan") to increase the number of shares reserved for issuance under the Plan to 30.0 million from 12.5 million.

In 2015, the Company adopted the 2015 Consultant Stock Plan (the "2015 Plan"). The 2015 Plan's main purpose was to provide stock option plans for certain consultants working for the Company. In 2016, the Board of Directors recommended and approved the reduction of stock reserved for issuance for both the 2012 Plan and 2015 Plan to 21.0 million and 0.7 million shares, respectively. As of December 31, 2018, there were 12.6 million future exercisable shares with intrinsic value of $27.7 million.

On February 22, 2018, the Company adopted the 2018 Equity Incentive Plan (the "2018 Plan") with 4.4 million shares available for future grant and no new stock options will be issued under the 2012 Plan or the 2015 Plan. The 2018 Plan is the successor to and continuation of the 2012 Plan, as amended and the 2015 Plan, and is

administered with either stock options or restricted stock units. The 2018 Plan also provides for other types of equity to issue awards, which at this time the Company does not plan to utilize.

Stock-based Compensation

Stock option activity during the year ended December 31, 2018 is as follows:

	Stock Options Outstanding	Exercise Price	Weighted Average Remaining Contractual Term (Years)
Balance at December 31, 2017	15,842,378	$ 0.97	
Awards authorized	—		
Options granted	1,821,750	3.07	
Options exercised	(1,071,869)	0.43	
Options forfeited	(823,810)	2.40	
Options expired	(93,010)	1.98	
Balance at December 31, 2018	15,675,439	$ 1.18	5.78
Vested and exercisable at December 31, 2018	12,570,811	$ 0.82	5.10
Vested and expected to vest at December 31, 2018	15,312,301	$ 1.14	5.71

Options available for grant totaled 2,670,974 at December 31, 2018. The aggregate intrinsic value of the shares underlying such options is immaterial at December 31, 2018.

The estimated fair values of stock options awards granted to employees were determined on the date of grant using the Black-Scholes option valuation model with the following weighted average assumptions:

	At December 31, 2018
Risk-free interest rate	2.3%-3.1%
Expected volatility	51%-53%
Expected dividend yield	—
Expected term (in years)	6 Years

For the year ended December 31, 2018, the following table presents total stock-based compensation expense in each functional line item on the consolidated statement of operations (in thousands):

	Year Ended December 31, 2018
Cost of sales	$ 731
Research and development	682
Selling and marketing	940
General and administrative	1,150
Total stock-based compensation expense	$ 3,503

At December 31, 2018, there was $3.6 million unrecognized compensation cost related to unvested stock options, which are expected to be recognized over a remaining weighted average vesting period of 2.57 years.

10. Income Taxes

On December 22, 2017, the Tax Cuts and Jobs Act (the "TCJA") was enacted into legislation, which includes a broad range of provisions affecting businesses. Impacts of the TCJA for the year ended December 31, 2017 included remeasuring ending federal deferred tax assets and liabilities due to the reduction of U.S. corporate income tax rate from 35.0% to 21.0% and providing for the acceleration of depreciation for certain assets placed into service after September 2017. In connection with the TCJA, the Securities and Exchange Commission issued guidance which allows the Company a year to finalize the income tax effect of the TCJA.

As of December 31, 2017, the Company recorded a provision tax expense of $3.4 million in connection with the remeasurement of federal deferred tax balances. The Company remeasured the deferred tax assets and liabilities based on the rates at which they are expected to reverse in the future, which is generally at 21.0%.

As of December 31, 2018, the Company has completed the accounting for the tax effect of the TCJA. No further adjustments were made with respect to the previously recorded provision amounts.

The provision for income taxes consists of the following (in thousands):

	Year Ended December 31, 2018
Current provision:	
Federal	$ (1,319)
State	324
	(995)
Deferred expense:	
Federal	5,163
State	1,082
	6,245
Income tax expense from continuing operations	5,250
Net income tax provision	$ 5,250

The components of income tax expense relate to the following (in thousands):

	Year Ended December 31, 2018
Income tax benefit at U.S. federal statutory rate	$ (26,010)
State income tax benefit, net of federal benefit	(3,223)
Meals and entertainment	306
Stock-based compensation	248
Federal research and development credit	(1,485)
Change in valuation allowance	36,473
Other	(1,059)
Total income tax expense	$ 5,250

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The tax effects of temporary differences that give rise to portions of the deferred tax assets and deferred tax liabilities as of December 31, 2018 are presented below (in thousands):

	Year Ended December 31, 2018
Deferred tax assets:	
Net operating losses and carryforwards	$ 18,907
Reserves	9,857
Intangible assets	4,147
Accrued expenses	4,329
Other	979
Total deferred tax assets	38,219
Deferred tax liabilities:	
Fixed assets	(1,426)
Prepaid expenses	(150)
Goodwill	(170)
Total deferred tax liabilities	(1,746)
Net deferred tax assets	36,473
Less: valuation allowance	(36,473)
Net deferred tax assets/liabilities	$ —

Due to the losses generated in 2018 and projected future taxable losses anticipated in the future, in 2018 management decided that it is not more likely than not that the Company will realize the benefits of their deferred tax assets, and as such, placed a $36.5 million valuation allowance on its net deferred tax assets.

At December 31, 2018, the Company had federal and state income tax net operating loss carryforwards of approximately $64.5 million and $63.3 million, respectively. The U.S. federal net operating losses will be carried forward indefinitely and state net operating losses will begin to expire in 2019 unless previously utilized. Net operating loss carryforwards generated post the TCJA may be carried forward indefinitely, subject to the 80% taxable income limitation on the utilization of the carryforwards. In addition, the Company had federal and state research and expenditure credit carryforwards approximately $1.5 million and $0.8 million, respectively, as of December 31, 2018. The federal research and expenditure credit will expire in 2038 if unused and the state research and expenditure credit may be carried forward indefinitely.

In accordance with ASC 740-10, *Income Taxes—Overall*, the impact of an uncertain income tax position on the income tax return must be recognized at the largest amount that is more likely than not to be sustained upon audit by the relevant taxing authority. An uncertain income tax position will not be recognized if it has less than a 50% likelihood of being sustained. The Company has no uncertain tax positions at December 31, 2018.

The Company’s policy is to recognize interest and penalties related to income tax matters in the provision for income taxes. At December 31, 2018, there were no interest and penalties related to uncertain tax positions.

The Company is subject to taxation in the United States and various state jurisdictions. The tax years 2014 through 2017 remain open to examination by the major taxing jurisdictions to which the Company is subject.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

11. Net Loss Per Share

Net loss per share is computed by dividing net loss attributable to common stockholders for the period by the weighted average number of common shares outstanding during the period. Diluted loss per share reflects the additional dilution from potential issuances of common stock, such as stock issuable pursuant to the exercise of stock options, as well as from the possible conversion of the Company's preferred stock and exercise of the outstanding warrant. The treasury stock and if-converted methods are used to calculate the potential dilutive effect of these common stock equivalents. However, potentially dilutive shares are excluded from the computation of diluted loss per share when their effect is antidilutive. Due to the Company reporting a net loss attributable to common stockholders for all periods presented, all potentially dilutive securities were antidilutive and have been excluded from the computation of diluted loss per share.

The table below provides potentially dilutive securities in equivalent common shares not included in the Company's calculation of diluted loss per share because to do so would be antidilutive:

	Year Ended December 31, 2018
Series A Preferred Stock	81,631,494
Series A-1 Preferred Stock	29,720,200
Series B Preferred Stock	14,164,306
Series B Preferred Stock Purchase Warrant	1,416,431
Options to purchase common stock	15,675,439
Restricted stock units	530,401
Total	143,138,271

Unaudited Pro Forma Loss Per Share Attributable to Common Stockholders

The calculation of unaudited pro forma basic and diluted loss per share attributable to common stockholders for the year ended December 31, 2018 is set forth in the table below (in thousands, except share and per share data):

	Year Ended December 31, 2018
Numerator:	
Net loss used in computing pro forma per share, basic and diluted	$ (129,106)
Denominator:	
Shares used in computing net loss per share, basic and diluted	28,773,598
Pro forma adjustments to reflect assumed conversion of preferred stock	125,516,000
Shares used in computing pro forma net loss per share, basic and diluted	154,289,598
Pro forma basic and diluted net loss per share	$ (0.84)

Pro forma diluted loss per share does not include outstanding stock options, restricted stock units, and the outstanding stock warrant since the effect would be antidilutive due to the pro forma net loss attributable to common stockholders for the period.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

12. Employee Benefit Plan

The Company has a qualified 401(k) employee savings plan for the benefit of its employees (the "plan"). Substantially all employees are eligible to participate in the plan. Under the plan, employees can contribute and defer taxes on compensation contributed. The Company has the option to make discretionary profit-sharing contributions to the plan. The Company made employer contributions to the plan of $1.9 million for the year ended December 31, 2018.

13. Subsequent Events

The Company has evaluated subsequent events from the balance sheet date through August 27, 2019, the date the consolidated financial statements were available to be issued.

In 2019, certain reclassifications were made to expense categories on the Company's consolidated statement of operations. Those reclassifications were retroactively made to the 2018 consolidated statement of operations to provide for consistent presentation.

On March 5, 2019, the Company declared dividends of $4.5 million on the issued and outstanding common stock and preferred stock (on an as-converted to common stock basis) and were paid on March 20, 2019.

On June 27, 2019, the Company sold its investment in NeoSeq to a third party for an aggregate sale price of $0.05 million.

On August 27, 2019, the Company entered into a Series B Preferred Stock Purchase Agreement and certain related agreements with a private equity firm (the "August 2019 Financing"). The first closing of the August 2019 Financing occurred on August 27, 2019. At the first closing, the Company raised $25.0 million from a private equity firm in exchange for the issuance of new shares of Series B Preferred Stock at per-share price of $2.75 per share. The Company may sell and issue additional shares of Series B Preferred Stock prior to December 31, 2019 subject to the terms and conditions of the purchase agreement. All previous outstanding shares of Series B Preferred Stock and the existing Series B Preferred Stock Purchase Warrant, which were issued at a higher price (see Note 8), were adjusted to the $2.75 per-share price. Each holder of the Company's Series A-1 Preferred Stock was granted and exercised the right to elect to exchange each share of Series A-1 Preferred Stock owned by such holder for a number of shares of Series B preferred stock equal to 1.2x the number of shares of common stock into which such Series A-1 Preferred Stock was convertible.

PROGENITY, INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED BALANCE SHEETS
(in thousands, except share data)

ASSETS	As of December 31, 2018	As of September 30, 2019 (unaudited)	Pro Forma as of September 30, 2019 (unaudited)
Current assets:			
Cash and cash equivalents	$ 49,005	$ 26,050	
Accounts receivable, net	1,952	24,923	
Short-term investments	20,200	—	
Inventory	7,616	11,170	
Income tax receivable	6,194	21	
Prepaid expenses and other current assets	3,979	6,567	
Total current assets	88,946	68,731	
Property and equipment, net	15,339	15,941	
Other assets	194	207	
Goodwill	6,219	6,219	
Other intangible assets, net	5,699	5,003	
Total assets	$ 116,397	$ 96,101	
LIABILITIES AND STOCKHOLDERS' DEFICIT			
Current liabilities:			
Accounts payable	$ 11,035	$ 22,989	
Accrued expenses and other current liabilities	65,793	66,788	
Current portion of mortgages payable	231	238	
Current portion of capital lease obligations	998	798	
Total current liabilities	78,057	90,813	
Capital lease obligations, net of current portion	893	487	
Mortgages payable, net of current portion	3,320	3,140	
Note payable to related party, net of unamortized discount of $7,705 and $6,475 as of December 31, 2018 and September 30, 2019, respectively	67,295	68,525	
Other long-term liabilities	3,800	22,203	
Total liabilities	$ 153,365	$ 185,168	
Commitments and Contingencies (Note 8)			
Stockholders' deficit:			
Common stock – $0.001 par value. 250,000,000 authorized as of December 31, 2018 and September 30, 2019; 50,120,357 and 52,192,245 shares issued as of December 31, 2018 and September 30, 2019, respectively; 28,654,265 and 30,726,153 shares outstanding as of December 31, 2018 and September 30, 2019, respectively; 175,294,616 shares outstanding as of September 30, 2019, pro forma	50	52	175
Series A and A-1 Preferred Stock – $0.001 par value. 6,120,000 and 5,620,000 shares authorized as of December 31, 2018 and September 30, 2019, respectively; 5,620,000 and 4,120,000 shares issued and outstanding as of December 31, 2018 and September 30, 2019, respectively; no shares issued and outstanding as of September 30, 2019, pro forma	6	4	—
Series B Preferred Stock – $0.001 par value. 15,580,737 and 101,118,787 shares authorized as of December 31, 2018 and September 30, 2019, respectively; 14,164,306 and 62,936,969 shares issued and outstanding as of December 31, 2018 and September 30, 2019, respectively; no shares issued and outstanding as of September 30, 2019, pro forma	14	63	—
Additional paid-in capital	124,202	191,223	191,167
Accumulated deficit	(142,469)	(261,638)	(261,638)
Treasury stock – at cost; 21,466,092 shares of common stock as of December 31, 2018 and September 30, 2019; actual and pro forma	(18,771)	(18,771)	(18,771)
Total stockholders' deficit	(36,968)	(89,067)	$ (89,067)
Total liabilities and stockholders' deficit	$ 116,397	$ 96,101	

See accompanying notes to condensed consolidated financial statements.

PROGENITY, INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(UNAUDITED)
(in thousands, except share and per share data)

	Nine Months Ended September 30,	
	2018	2019
Revenue	$ 131,979	$ 123,509
Cost of sales	69,358	75,531
Gross profit	62,621	47,978
Operating expenses:		
Research and development	34,230	48,791
Selling and marketing	36,998	45,510
General and administrative	38,577	44,823
Total operating expenses	109,805	139,124
Loss from operations	(47,184)	(91,146)
Interest and other income, net	1,404	457
Interest expense	(6,794)	(6,872)
Equity loss of equity method investee	(932)	—
Loss before taxes	(53,506)	(97,561)
Income tax expense	6,255	—
Net loss	$ (59,761)	$ (97,561)
Dividend paid to preferred stockholders	—	(3,652)
Stock dividend on exchange of Series A-1 to Series B Preferred Stock	—	(27,637)
Stock dividend on Series B Preferred Stock	—	(13,137)
Net loss attributable to common stockholders	$ (59,761)	$ (141,987)
Net loss per share attributable to common stockholders, basic and diluted	$ (2.07)	$ (4.74)
Weighted average number of shares outstanding, basic and diluted	28,834,005	29,973,919
Pro forma loss per share, basic and diluted (unaudited)	$ (0.39)	$ (0.90)
Pro forma weighted average shares outstanding, basic and diluted (unaudited)	154,350,005	157,862,753

See accompanying notes to condensed consolidated financial statements.

PROGENITY, INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (DEFICIT)
(UNAUDITED)
(in thousands, except for share data)

	Common Stock		Series A and A-1 Preferred Stock		Series B Preferred Stock		Additional Paid-in Capital	Accumulated Deficit	Treasury Stock		Total
	Shares	Amount	Shares	Amount	Shares	Amount			Common Shares	Amount	
Balance—December 31, 2017	49,048,488	$ 49	5,620,000	$ 6	14,164,306	$ 14	$ 121,481	$ (13,363)	(17,923,237)	$ (7,505)	$100,682
Exercise of stock options	879,217	1	—	—	—	—	192	—	—	—	193
Stock-based compensation	—	—	—	—	—	—	1,770	—	—	—	1,770
Repurchase of common shares	—	—	—	—	—	—	—	—	(3,542,855)	(11,266)	(11,266)
Net loss	—	—	—	—	—	—	—	(59,761)	—	—	(59,761)
Balance—September 30, 2018	49,927,705	$ 50	5,620,000	$ 6	14,164,306	$ 14	$ 123,443	$ (73,124)	(21,466,092)	$(18,771)	$ 31,618
Balance—December 31, 2018	50,120,357	$ 50	5,620,000	$ 6	14,164,306	$ 14	$ 124,202	$ (142,469)	(21,466,092)	$(18,771)	$ (36,968)
Adoption of accounting standard (see Note 2)	—	—	—	—	—	—	—	23,666	—	—	23,666
Exercise of common stock options	2,071,888	2	—	—	—	—	528	—	—	—	530
Exchange of Series A-1 Preferred Stock to Series B Preferred Stock	—	—	(1,500,000)	(2)	35,664,241	36	27,603	(27,637)	—	—	—
Issuance of Series B Preferred Stock, net of issuance cost	—	—	—	—	9,090,910	9	23,974	—	—	—	23,983
Stock dividend on Series B Preferred Stock	—	—	—	—	4,017,512	4	13,133	(13,137)	—	—	—
Stock-based compensation	—	—	—	—	—	—	1,783	—	—	—	1,783
Dividends paid	—	—	—	—	—	—	—	(4,500)	—	—	(4,500)
Net loss	—	—	—	—	—	—	—	(97,561)	—	—	(97,561)
Balance—September 30, 2019	52,192,245	$ 52	4,120,000	$ 4	62,936,969	$ 63	$ 191,223	$ (261,638)	(21,466,092)	$(18,771)	$ (89,067)

See accompanying notes to condensed consolidated financial statements.

PROGENITY, INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(UNAUDITED)
(in thousands)

	Nine Months Ended September 30,	
	2018	2019
Cash flows from operating activities:		
Net loss	$(59,761)	$(97,561)
Adjustments to reconcile net loss to cash used in operating activities:		
Depreciation and amortization	4,506	4,709
Inventory write-down	—	120
Loss on disposal of property and equipment	7	—
Equity loss of equity method investee	932	—
Stock-based compensation expense	1,770	1,783
Deferred taxes, net	6,245	—
Changes in operating assets and liabilities:		
Accounts receivable, net	386	695
Inventory	(736)	(3,675)
Prepaid expenses and other current assets	(2,729)	(2,588)
Income tax receivable	100	6,173
Other assets	(32)	(62)
Accounts payable	4,763	10,729
Accrued expenses and other liabilities	10,927	995
Other long-term liabilities	(62)	18,403
Net cash used in operating activities	(33,684)	(60,279)
Cash flows from investing activities:		
Purchases of property and equipment	(3,292)	(2,917)
Purchases of short-term investments	(146,811)	(11,214)
Proceeds from the sale of short-term investments	167,720	31,414
Proceeds from the sale of equity method investment	—	50
Net cash provided by investing activities	17,617	17,333
Cash flows from financing activities**:**		
Proceeds from issuance of common stock	192	530
Proceeds from issuance of Series B Preferred Stock and warrant, net of issuance cost	—	24,967
Repurchase of common stock	(11,266)	—
Dividends paid	—	(4,500)
Principal payments on mortgages payable	(164)	(172)
Principal payments on capital lease obligations	(1,158)	(834)
Payments for contingent consideration	(250)	—
Net cash (used in) provided by financing activities	(12,646)	19,991
Net decrease in cash and cash equivalents	$ (28,713)	$ (22,955)
Cash and cash equivalents—beginning of period	$ 71,107	$ 49,005
Cash and cash equivalents—end of period	$ 42,394	$ 26,050
Supplemental disclosure of cash flow information:		
Cash paid for interest	$ 3,798	$ 5,642
Cash paid for income taxes	141	6
Supplemental schedule of noncash investing and financing activities:		
Purchases of property and equipment in accounts payable	428	240
Capital lease obligations	377	229
Equity financing issuance cost incurred but not paid	—	984
Stock dividend on exchange of Series A-1 to Series B Preferred Stock	—	27,367
Stock dividend on Series B Preferred Stock	—	13,137

See accompanying notes to condensed consolidated financial statements.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

1. Organization and Description of Business

Progenity, Inc. and subsidiaries (the "Company" or "Progenity"), a Delaware corporation, commenced operations in 2010 with its corporate office located in San Diego, California. Progenity's primary operations include a licensed Clinical License Improvement Amendment ("CLIA") and College of American Pathologists ("CAP") certified laboratory located in Michigan specializing in the molecular testing markets serving women's health providers in the obstetric, gynecological, fertility, and maternal fetal medicine specialty areas in the United States.

The Company has expertise in the national reference laboratory, clinical genetics, laboratory molecular testing, and biotechnology markets. Distribution is managed by a dedicated women's health physician sales force and a field operations team who support all logistical functions in receiving clinical samples to the laboratory for analysis.

The Company's core business is focused on the prenatal carrier screening and noninvasive prenatal test market, targeting preconception planning, and routine pregnancy management for genetic disease risk assessment.

Through its affiliation with Mattison Pathology, LLP ("Mattison"), a Texas limited liability partnership doing business as Avero Diagnostics ("Avero"), located in Lubbock and Dallas, Texas, the Company's operations have expanded to provide anatomic and molecular pathology testing products in the United States.

Liquidity

As of September 30, 2019, the Company had cash and cash equivalents of $26.1 million and an accumulated deficit of $261.6 million. During the nine months ended September 30, 2019, the Company also had a net loss of $97.6 million and cash used in operations of $60.3 million. The Company's primary sources of capital have been private placements of preferred stock and incurrence of debt. As of September 30, 2019, the Company had a $75.0 million term loan outstanding with a private equity firm (see Note 6), and mortgages outstanding of $3.4 million (see Note 7). Management does not believe that the current available cash and cash equivalents will be sufficient to fund the Company's planned expenditures and meet its obligations for at least 12 months following the financial statement issuance date without raising additional funding. As a result, there is substantial doubt about the Company's ability to continue as a going concern for the twelve months following the issuance date of the condensed consolidated financial statements for the nine months ended September 30, 2019.

The Company's ability to continue as a going concern is dependent upon its ability to raise additional funding. Management intends to raise additional capital through equity offerings and/or debt financings. Adequate funding, if needed, may not be available to the Company on acceptable terms, or at all. If the Company is unable to raise capital when needed or on attractive terms, it would be forced to delay, reduce, or eliminate its research and development programs or other operations. If any of these events occur, the Company's ability to achieve its operational goals would be adversely affected.

2. Summary of Significant Accounting Policies

Basis of Presentation

The Company's financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America ("GAAP") and include the accounts of Progenity, Inc., its wholly owned subsidiaries, and an affiliated professional partnership with Avero, with respect to which the Company currently has a specific management arrangement. The term of the Company's agreement with Avero is 10 years, subject to automatic renewals. The agreement can be terminated by either party with a 90-day notice; however, a

separate nominee agreement in place provides the Company the right, but not the obligation, to purchase, or to designate a person(s) to purchase, the stock of Avero at any time for a nominal amount. The Company receives a management fee equal to the net operating income of Avero. The Company has determined that Avero is a variable interest entity and that the Company is the primary beneficiary resulting in the consolidation of Avero as required by the accounting guidance for consolidation. All significant intercompany balances and transactions have been eliminated in consolidation.

There have been no material changes in the Company's significant accounting policies, other than the adoption of Financial Accounting Standards Board ("FASB") Accounting Standards Update ("ASU") Nos. 2014-09 *Revenue from Contracts with Customers* ("ASC 606"), described below.

Unaudited Interim Financial Information

The accompanying balance sheet as of September 30, 2019, the statements of operations, the statements of stockholders' equity (deficit) and statements of cash flows for the nine months ended September 30, 2018 and 2019 are unaudited. The unaudited interim financial statements have been prepared on the same basis as the audited annual financial statements and, in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary for the fair statement of the Company's financial position as of September 30, 2019 and the results of its operations and its cash flows for the nine months ended September 30, 2018 and 2019. The financial data and other information disclosed in these notes related to the nine months ended September 30, 2018 and 2019 are also unaudited. The results for the nine months ended September 30, 2019 are not necessarily indicative of results to be expected for the year ending December 31, 2019, any other interim periods, or any future year or period. The balance sheet as of December 31, 2018 included herein was derived from the audited financial statements as of that date. Certain disclosures have been condensed or omitted from the interim financial statements. These financial statements should be read in conjunction with the Company's audited financial statements included elsewhere in this prospectus.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Significant items subject to such estimates include the estimate of variable consideration in connection with the recognition of revenue, the valuation of Series B preferred stock, the valuation of stock options, the valuation of goodwill and intangible assets, accrual for reimbursement claims and settlements, assessing future tax exposure and the realization of deferred tax assets, the useful lives and recoverability of property and equipment, and the fair value of contingent liabilities. The Company bases these estimates on historical and anticipated results, trends, and various other assumptions that the Company believes are reasonable under the circumstances, including assumptions as to future events. These estimates form the basis for making judgments about the carrying values of assets and liabilities and recorded revenues and expenses that are not readily apparent from other sources. Actual results could differ from those estimates and assumptions.

Operating Segments

Operating segments are identified as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision maker or decision-making group in making decisions on how to allocate resources and assess performance. The Company views its operations and manages its business as one operating segment. All revenues are attributable to U.S.-based operations and all assets are held in the United States.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Revenue Recognition

Revenue is recognized in accordance with Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") Topic 606, *Revenue from Contracts with Customers* ("ASC 606"). The Company adopted ASC 606 with an initial application date of January 1, 2019 using the modified retrospective method, as discussed under *Recent Accounting Pronouncements Adopted* below. In accordance with ASC 606, the Company follows a five-step process to recognize revenues: 1) identify the contract with the customer, 2) identify the performance obligations, 3) determine the transaction price, 4) allocate the transaction price to the performance obligations and 5) recognize revenues when the performance obligations are satisfied.

Revenue is primarily derived from providing molecular testing products, which are reimbursed through arrangements with third-party payors, laboratory distribution partners, and amounts from individual patients. Third-party payors include commercial payors, such as health insurance companies, health maintenance organizations and government health benefit programs such as Medicare and Medicaid. The Company's contracts generally contain a single performance obligation, which is the delivery of the test results, and the Company satisfies its performance obligation at a point in time upon the delivery of the results, which then triggers the billing for the product. The amount of revenue recognized reflects the amount of consideration the Company expects to be entitled (the "transaction price") and considers the effects of variable consideration. Revenue is recognized when control of the promised product is transferred to customers, in an amount that reflects the consideration the Company expects to be entitled to in exchange for those products.

The Company has elected to apply the following practical expedients and exemptions:

- Incremental costs incurred to obtain a contract have been expensed as incurred because the related amortization period would have been one year or less. The costs are included in selling and marketing expenses.
- No adjustments to amounts of promised consideration were made for the effects of a significant financing component because the Company expects, at contract inception, that the period between the transfer of a promised good or service and customer payment for that good or service will be one year or less.

Payor Concentration

The Company relies upon reimbursements from third-party government payors and private-payor insurance companies to collect accounts receivable. The Company's significant third-party payors and their related revenues as a percentage of total revenues and accounts receivable balances are as follows:

	Percentage of Revenue Nine Months Ended September 30,		Percentage of Accounts Receivable(1) As of September 30,
	2018	2019	2019
United Healthcare	20.7%	30.9%	38.4%
Blue Shield of Texas	13.1%	19.4%	4.9%
Government Health Benefits Programs	17.1%	9.3%	22.0%
Aetna	13.8%	8.1%	6.6%

(1) The percentage of accounts receivable at December 31, 2018 is not presented as the majority of the Company's revenue was recorded as cash was received prior to the adoption of ASC 606 on January 1, 2019 and is therefore not comparable to the amounts at September 30, 2019.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Accounts Receivable

Accounts receivable is recorded at the transaction price and considers the effects of variable consideration. The total consideration the Company expects to collect is an estimate and may be fixed or variable. Variable consideration includes reimbursement from third-party payors, laboratory distribution partners, and amounts from individual patients, and is adjusted for disallowed cases, discounts, and refunds using the expected value approach. The Company monitors these estimates at each reporting period based on actual cash collections in order to assess whether a revision to the estimate is required.

Net Loss Per Share

Basic and diluted net loss per share attributable to common stockholders is presented in conformity with the two-class method required for participating securities. The Company considers all series of preferred stock to be participating securities as the holders of such stock are entitled to receive non-cumulative dividends on an as-converted basis in the event that a dividend is paid on common stock. Under the two-class method, the net loss attributable to common stockholders is not allocated to the preferred stock as the holders of preferred stock do not have a contractual obligation to share in the Company's losses. Under the two-class method, net income is attributed to common stockholders and participating securities based on their participation rights.

Basic net loss per share attributable to common stockholders is computed by dividing the net loss attributable to common stockholders by the weighted average number of shares of common stock outstanding during the period. Net loss attributable to common stockholders is calculated by adjusting net loss with dividends to preferred stockholders, if any. As the Company has reported net losses for all periods presented, all potentially dilutive securities are antidilutive and, accordingly, basic net loss per share equals diluted net loss per share.

Equity Method Investment

Investments over which the Company is deemed to exert significant influence but not control are accounted for using the equity method of accounting. For investments accounted for under the equity method of accounting, the Company's share of income (losses) is included in equity in income of investees in the condensed consolidated statements of operations. As of December 31, 2018 the Company owned a 20% interest in NeoSeq Ltd., a Cayman Islands exempted company ("NeoSeq"), which operated a laboratory in China focused on fetal diagnostic operations for the Asia Pacific market and certain Middle Eastern countries. The Company evaluates the equity method investment for impairment whenever an event or change in circumstances occurs that may have a significant adverse impact on the carrying value of the investment. During the year ended December 31, 2018, NeoSeq completed a financing transaction that diluted the Company's ownership in NeoSeq. Due to this transaction and continued losses, the Company recorded an other-than-temporary impairment of $1.4 million during the year ended December 31, 2018 within the equity loss of the equity method investee in the accompanying consolidated statements of operations.

On June 27, 2019, the Company sold the Neoseq investment to a third-party for an aggregate price of $0.05 million.

Comprehensive Loss

The Company did not have any other comprehensive income or loss for any of the periods presented, and therefore comprehensive loss was the same as the Company's net loss.

Unaudited Pro Forma Information

All outstanding shares of preferred stock will automatically convert into shares of the Company's common stock upon the closing of a qualified initial public offering ("IPO"), as defined in the Company's certificate of

incorporation and as described in Note 9. The unaudited pro forma balance sheet information as September 30, 2019 has been prepared assuming the automatic conversion of the preferred stock into shares of common stock assuming the completion of an IPO on September 30, 2019.

The unaudited pro forma net loss per share attributable to common stockholders for the nine months ended September 30, 2019 has been computed to give effect to the automatic conversion upon the closing of a qualified IPO of preferred stock into common stock using the if-converted method as though such IPO had occurred as of the beginning of the period or the date of issuance, if later.

Recent Accounting Pronouncements Adopted

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers* (*Topic 606*), which supersedes the revenue recognition requirements in ASC Topic 605, *Revenue Recognition* ("ASC 605"), and requires entities to recognize revenue when they transfer control of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled to in exchange for those goods or services. The Company adopted ASC 606 as of January 1, 2019, using the modified retrospective transition method applied to those contracts which were not completed as of January 1, 2019. Results for reporting periods beginning after January 1, 2019 are presented under ASC 606, while prior period amounts have not been adjusted and continue to be reported in accordance with the Company's historical accounting policy under ASC 605.

Upon adoption, the Company recognized the cumulative effect of adopting this guidance as an adjustment to its opening accumulated deficit balance. The Company recorded a one-time increase to opening accounts receivable, net, and a reduction to opening accumulated deficit of $23.7 million as of January 1, 2019. The adjustment was primarily related to the recognition of variable consideration the Company expects to receive that was previously recognized as cash was received under ASC 605. The disclosure of revenue without the adoption of ASC 606 for the nine months ended September 30, 2019 includes an adjustment for the portion of the Company's revenue that was previously recognized as cash was received under ASC 605.

In accordance with the new revenue standard requirements, the disclosure of the impact of adoption on the Company's condensed consolidated balance sheets as of January 1, 2019 and September 30, 2019 and statement of operations for the nine months ended September 30, 2019 was as follows (in thousands, except per share data):

	January 1, 2019		
	Under ASC 606	Adoption of ASC 606	Without Adoption of ASC 606
Accounts receivable, net of allowance	$ 25,618	$ (23,666)	$ 1,952
Accumulated deficit	(118,803)	(23,666)	(142,469)

	As of September 30, 2019		
	Under ASC 606	Adoption of ASC 606	Without Adoption of ASC 606
Accounts receivable, net of allowance	$ 24,923	$ (22,153)	$ 2,770
Accumulated deficit	(261,638)	(22,153)	(283,791)

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

	Nine Months Ended September 30, 2019		
	Revenue under ASC 606	Adoption of ASC 606	Revenue without Adoption of ASC 606(1)
Product revenues	$ 123,509	$ 1,528	$ 125,037
Total revenues	123,509	1,528	125,037
Loss from operations	(91,146)	1,528	(89,618)
Net loss	(97,561)	1,528	(96,033)
Net loss attributable to common stockholders	(141,987)	1,528	(140,459)
Net loss per share attributable to common stockholders, basic and diluted	$ (4.74)	$ 0.05	$ (4.69)

(1) Under ASC 605, revenue was not recognized until cash was received for the majority of the Company's molecular products. For the portion of the revenue that was not recognized until cash was received under ASC 605, the cash receipts during the nine months ended September 30, 2019 were greater than the estimated transaction price recognized as revenue as tests were performed during the same period under ASC 606.

In August 2016, the FASB issued ASU No. 2016-15, *Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments.* This standard is intended to address eight classification issues related to the statement of cash flows to reduce diversity in practice in how certain transactions are classified. The Company adopted the new accounting standard in fiscal year 2019 using the retrospective transition method for each period presented, which did not have a material impact on the condensed consolidated financial statements.

Recent Accounting Pronouncements Not Yet Adopted

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*, which supersedes FASB ASC Topic 840, Leases (Topic 840), and provides principles for the recognition, measurement, presentation and disclosure of leases for both lessees and lessors. The new standard requires lessees to apply a dual approach, classifying leases as either finance or operating leases based on the principle of whether or not the lease is effectively a financed purchase by the lessee. This classification will determine whether lease expense is recognized based on an effective interest method for finance leases or on a straight-line basis over the term of the lease for operating leases. A lessee is also required to record a right-of-use asset and a lease liability for all leases with a term of greater than 12 months regardless of classification. Leases with a term of 12 months or less will be accounted for similar to existing guidance for operating leases. The Company is still assessing the impact that the new leasing standard will have on operations and financial position.

In November 2019, the FASB issued ASU No. 2019-10, *Leases (Topic 842): Effective Dates*. The new standard is effective for the Company for annual reporting periods beginning after December 15, 2020.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments—Credit Losses*, which requires the measurement of expected credit losses for financial instruments carried at amortized cost, such as accounts receivable, held at the reporting date based on historical experience, current conditions and reasonable forecasts. The main objective of this standard is to provide financial statement users with more decision-useful information about the expected credit losses on financial instruments and other commitments to extend credit held by a reporting entity at each reporting date. In November 2018, the FASB issued ASU No. 2018-19, *Codification Improvements to Topic 326, Financing Instruments–Credit Losses*, which included an amendment of the effective date. The Company does not believe the adoption of this standard will have a significant impact on the

financial statements. The standard is effective for the Company for annual reporting periods beginning after December 15, 2022.

In January 2017, the FASB issued ASU No. 2017-04, *Intangibles—Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment.* The new standard will simplify the measurement of goodwill by eliminating step two of the two-step impairment test. Step two measures a goodwill impairment loss by comparing the implied fair value of a reporting unit's goodwill with the carrying amount of that goodwill. The new guidance requires an entity to compare the fair value of a reporting unit with its carrying amount and recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value. Additionally, an entity should consider income tax effects from any tax-deductible goodwill on the carrying amount of the reporting unit when measuring the goodwill impairment loss, if applicable. The Company is still assessing the potential impact of the standard on the condensed consolidated financial statements. The standard is effective for the Company for annual reporting periods beginning after December 15, 2022.

In June 2018, the FASB issued ASU No. 2018-07, *Improvements to Nonemployee Share-Based Payment Accounting.* The standard simplifies the accounting for share-based payments granted to nonemployees for goods and services and aligns most of the guidance on such payments to the nonemployees with the requirements for share-based payments granted to employees. ASU 2018-07 is effective for the Company for annual reporting periods beginning after December 15, 2019, and interim periods therein. The Company does not expect the adoption of this standard to have a material impact on its condensed consolidated financial statements.

In August 2018, the FASB issued ASU No. 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement*, which eliminates certain disclosure requirements for fair value measurements for all entities, requires public entities to disclose certain new information and modifies some disclosure requirements. The Company does not expect the adoption of this ASU to have a material impact on its condensed consolidated financial statements. The standard is effective for the Company for annual reporting periods beginning after December 15, 2019.

3. Revenue

Product revenue is derived from contracts with healthcare insurers, government payors, laboratory partners and patients in connection with sales of prenatal genetic, anatomic or molecular pathology tests. The Company enters into contracts with health care insurers related to tests provided to patients who have health insurance coverage. Insurance carriers are considered third-party payors on behalf of the patients, and the patients who receive genetic, anatomic or molecular pathology test products are considered the customers. Tests may be billed to insurance carriers, patients, or a combination of insurance carriers and patients. The Company also sells tests to laboratory partners and has also identified those parties as customers.

In accordance with ASC 606, a performance obligation represents a promise in a contract to transfer a distinct good or service to a customer and the consideration should be allocated to each distinct performance obligation and recognized as revenue when, or as, the performance obligation is satisfied. The Company has evaluated its contracts with health care insurers, government payors, laboratory partners and patients and identified a single performance obligation in those contracts, the delivery of a test result. The Company satisfies its performance obligation at a point in time upon the delivery of the test result, at which point the Company can bill for its products. The amount of revenue recognized reflects the transaction price and considers the effects of variable consideration, which is discussed below.

The transaction price is an estimate and may be fixed or variable. Variable consideration includes reimbursement from healthcare insurers, government payors, and patients and is adjusted for estimates of disallowed cases,

discounts, and refunds using the expected value approach. Tests billed to healthcare insurers and directly to patients can take up to six months to collect and the Company may be paid less than the full amount billed or not paid at all. For insurance carriers and government payors, management utilizes the expected value method using a portfolio of relevant historical data for payors with similar reimbursement experience. The portfolio estimate is developed using historical reimbursement data from payors and patients, as well as known current reimbursement trends not reflected in the historical data. Such variable consideration is included in the transaction price only to the extent it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainties with respect to the amount are resolved. Management monitors these estimates at each reporting period based on actual cash collections and status of settlement agreements with third-party payors, in order to assess whether a revision to the estimate is required. Both the initial estimate and any subsequent revision to the estimate contain uncertainty and require the use of judgment in the estimation of the transaction price and application of the constraint for variable consideration. If actual results in the future vary from the Company's estimates, the Company will adjust these estimates, which would affect revenue and earnings in the period such variances become known. The consideration expected from laboratory partners is generally a fixed amount.

During the nine months ended September 30, 2019, the Company updated its estimate of the variable consideration recognized for previously delivered performance obligations which resulted in an additional $1.0 million of revenue for the nine months ended September 30, 2019. This amount includes (i) adjustments for actual collections versus estimated variable consideration as of the beginning of the reporting period and (ii) cash collections and the related recognition of revenue in the current period for tests delivered in prior periods due to the release of the constraint on variable consideration, offset by (iii) reductions in revenue for the accrual for reimbursement claims and settlements described in Note 8, *Commitments and Contingencies.*

Once the Company satisfies its performance obligations upon delivery of a test result and bills for the product, the timing of the collection of payments may vary based on the payment practices of the third-party payor. The Company bills patients directly for co-pays and deductibles that they are responsible for and also bills patients directly in cases where the customer does not have insurance.

The Company has established an accrual for refunds of payments previously made by healthcare insurers based on historical experience and executed settlement agreements with healthcare insurers. The refunds are accounted for as reductions in revenues in the statement of operations as an element of variable consideration.

During the nine months ended September 30, 2018 and 2019, all revenues were with payors located in the United States.

Disaggregation of Revenues

The following table shows a further disaggregation of revenues by payor type (in thousands):

	Nine Months Ended September 30,	
	2018	2019
Commercial Third-Party Payors	$106,529	$108,851
Government Health Benefit Programs	22,631	11,432
Patient/Laboratory Distribution Partners	2,819	3,226
Total revenues	$131,979	$123,509

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

4. Balance Sheet Components

Prepaid expenses and other current assets

Prepaid expenses and other current assets consist of the following (in thousands):

	December 31, 2018	September 30, 2019
Prepaid expenses	$ 3,375	$ 6,479
Other current assets	604	88
Total	$ 3,979	$ 6,567

Property and equipment, net

Property and equipment, net consists of the following (in thousands):

	December 31, 2018	September 30, 2019
Computers and software	$ 12,659	$ 14,240
Building and leasehold improvements	9,198	9,296
Laboratory equipment	4,324	5,295
Furniture, fixtures, and office equipment	1,422	1,451
Construction in progress	761	1,468
Land	1,091	1,091
Total property and equipment	29,455	32,841
Less accumulated depreciation and amortization	(14,116)	(16,900)
Property and equipment, net	$ 15,339	$ 15,941

Capital leases included in property and equipment, net consist of the following (in thousands):

	December 31, 2018	September 30, 2019
Capital leases	$ 5,114	$ 5,342
Less accumulated depreciation and amortization	(2,589)	(3,453)
Property and equipment, net	$ 2,525	$ 1,889

Depreciation expense was $2.7 million and $2.8 million for the nine months ended September 30, 2018 and 2019, respectively.

Intangible assets, net

Intangible assets, net consist of the following (in thousands):

	December 31, 2018		
	Cost	Accumulated amortization	Net
Payor relationships	$7,230	$ (2,590)	$4,640
Trade names	1,410	(505)	905
Noncompete agreements	384	(230)	154
Intangible assets, net	$9,024	$ (3,325)	$5,699

	September 30, 2019		
	Cost	Accumulated amortization	Net
Payor relationships	$7,230	$ (3,133)	$4,097
Trade names	1,410	(611)	799
Noncompete agreements	384	(277)	107
Intangible assets, net	$9,024	$ (4,021)	$5,003

Amortization expense of intangible assets for the nine months ended September 30, 2018 and 2019 was $0.7 million and $0.7 million, respectively.

The future amortization of intangible assets at September 30, 2019 is (in thousands):

Year Ending December 31,	
2019 (remaining three months)	$ 232
2020	928
2021	891
2022	864
2023	864
Thereafter	1,224
Total future minimum amortization	$5,003

Accrued expenses and other current liabilities

Accrued expenses and other current liabilities consist of the following (in thousands):

	December 31, 2018	September 30, 2019
Accrual for reimbursement claims and settlements	$ 46,405	$ 42,329
Commissions and bonus	6,628	7,882
Vacation and payroll benefits	4,840	6,800
Accrued professional services	3,146	4,053
Other	4,774	5,724
Total	$ 65,793	$ 66,788

Other long-term liabilities

Other long-term liabilities consist of the following (in thousands):

	December 31, 2018	September 30, 2019
Accrual for reimbursement claims and settlements—long term	$ 3,000	$ 21,523
Other	800	680
Total	$ 3,800	$ 22,203

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

5. Fair Value Measurements

The following table presents information about the Company's assets and liabilities that are measured at fair value on a recurring basis and indicates the fair value hierarchy of the valuation techniques utilized to determine such fair value (in thousands):

	Quoted Market Prices for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
At December 31, 2018			
Money market funds(1)	$ 10,217	$ —	$ —
Certificate of deposits(1)(2)	—	51,415	—
At September 30, 2019			
Money market funds(1)	$ 16,634	$ —	$ —

(1) Included in cash and cash equivalents in the accompanying condensed consolidated balance sheets.
(2) Included in short-term investments in the accompanying condensed consolidated balance sheets.

Short-term investment, which consists of a certificate of deposit with a maturity of 12 months or less, is classified as a Level 2 financial asset because it is valued using quoted market price and other observable inputs in active markets for identical securities.

There were no significant transfers between Level 1 and Level 2 during the year ended December 31, 2018 and nine months ended September 30, 2019. The Company's policy is to recognize transfers between levels at the end of the reporting period.

The Company recorded a non-recurring Level 3 fair value measurement on its investment in NeoSeq that resulted in an impairment loss of $1.4 million for the year ended December 31, 2018, discussed in Note 2 "Equity Method Investment".

Fair Value of Financial Instruments

The carrying value of the Company's accounts receivable, income tax receivable, accounts payable, and accrued expenses and other current liabilities are considered to be representative of their respective fair values because of their short-term nature.

The carrying value of the Company's mortgages payable approximates their estimated fair value because the instruments bear interest at rates and have terms that are comparable to those available to the Company for similar loan instruments at December 31, 2018 and September 30, 2019

The carrying value of the Company's note payable to a related party does not approximate its fair value because the instrument bears interest at a rate that is not comparable to those available to the Company for a similar loan instrument at September 30, 2019. The carrying value and the fair value of the Company's term loan (the "2017 Term Loan") is $75.0 million and $76.7 million, respectively, at December 31, 2018 and $75.0 million and $78.6 million, respectively, at September 30, 2019. The carrying value of the 2017 Term Loan is presented on the accompanying consolidated balance sheet net of discount on the note and debt issuance cost.

6. Note Payable to Related Party

On October 27, 2017, the Company entered into a Credit and Security Agreement and a Series B Convertible Preferred Stock Purchase Agreement with a private equity firm (the "2017 Transaction"). The 2017 Transaction

provided for the 2017 Term Loan, the issuance of Series B Preferred Stock (the "Series B Preferred Stock"), and the issuance of a warrant to purchase Series B Preferred Stock (the "Series B Preferred Stock Purchase Warrant"). The 2017 Term Loan accrues interest at a rate per annum equal to 9.5% and is due October 27, 2022.

The 2017 Term Loan contains customary covenants, including a requirement to maintain a minimum unrestricted cash balance at all times at least equal to $5.0 million. The Company is in compliance with the 2017 Term Loan covenants. The 2017 Term Loan is secured by all tangible and intangible property and assets of the Company, with the exception of intellectual property.

The total proceeds of $124.2 million from the 2017 Transaction were allocated to the 2017 Term Loan, Series B Preferred Stock, and the Series B Preferred Stock Purchase Warrant based on the relative fair value of the term loan, equity, and warrant issued. As a result, the Company allocated proceeds of $65.7 million to the 2017 Term Loan. As the proceeds allocated to the 2017 Term Loan are lower than the stated loan amount of $75.0 million, the resulting $9.3 million discount will be amortized as interest expense using the effective interest method over the term of the loan.

As of September 30, 2019, the outstanding unpaid principal under the 2017 Term Loan is $75.0 million, due in October 2022. The unamortized discount on the 2017 Term Loan was $7.7 million and $6.5 million as of December 31, 2018 and September 30, 2019, respectively.

During the nine months ended September 30, 2018 and 2019, the Company recognized interest expense on the 2017 Term Loan of $6.5 million and $6.6 million, inclusive of $1.1 million and $1.2 million of amortized interest expense on the discount for the nine months ended September 30, 2018 and 2019, respectively.

7. Mortgages Payable

On January 24, 2014, the Company executed a mortgage with Comerica Bank for $1.8 million for the purpose of acquiring property located in Ann Arbor, Michigan, which was previously leased by the Company and used for laboratory testing and research purposes. The outstanding balance as of September 30, 2019 was $1.4 million. The mortgage matures in 2024 and requires monthly principal and interest payments at a fixed interest rate of 2.94% plus a floating rate at London Interbank Offered Rate ("LIBOR").

The Company also has a mortgage with American Bank of Commerce (originally executed on February 19, 2008) outstanding on Avero's property located in Lubbock, Texas, which is used primarily for laboratory testing. The outstanding balance as of September 30, 2019 was $2.0 million. The mortgage matures in 2029 and requires monthly principal and interest payments at an interest rate of 4.25%.

As of September 30, 2019, the minimum principal payments under the mortgages payable are as follows (in thousands):

Year Ending December 31,	Minimum Mortgages Payable Payments
2019 (remaining three months)	$ 59
2020	241
2021	253
2022	265
2023 and thereafter	2,560
Total future minimum payments	$ 3,378
Less current portion of mortgages payable	(238)
Mortgages payable, net of current portion	$ 3,140

8. Commitments and Contingencies

Operating Leases

The Company has entered into various noncancelable operating lease agreements, primarily for office space, laboratory space, and vehicles, which expire over the next 3 to 5 years. Minimum rent payments under operating leases are recognized on a straight-line basis over the term of the lease. Rent expense for operating leases for the nine months ended September 30, 2018 and 2019, was $5.3 million and $6.6 million, respectively.

On March 22, 2019, the Company entered into the Fifth Amendment agreement with San Diego UTC Holding LLC. The amended lease expanded the office space in the San Diego UTC office from 16,905 to 25,795 rentable square feet. The term of the lease expires on June 30, 2023.

As of September 30, 2019, the Company's net minimum payments under the non-cancelable operating leases are as follows (in thousands):

Year Ending December 31,	Minimum Operating Lease Payments
2019 (remaining three months)	$ 3,001
2020	7,330
2021	4,871
2022	2,692
2023 and thereafter	956
Total future minimum payments	$ 18,850

Capital Leases

The Company has entered into various capital lease agreements, primarily for equipment. The outstanding leases have a weighted average imputed interest rate of 5.33% per annum.

As of September 30, 2019, the future minimum payments under the capital leases are as follows (in thousands):

Year Ending December 31,	Minimum Capital Lease Payments
2019 (remaining three months)	$ 231
2020	773
2021	324
2022 and thereafter	47
Total future minimum payments	$ 1,375
Less amount representing interest	(90)
Present value of minimum capital lease payments	1,285
Less current portion of capital lease obligations	(798)
Capital lease obligations, net of current portion	$ 487

Contingencies

The Company, in the ordinary course of its business, can be involved in lawsuits, threats of litigation, and audit and investigative demands from third parties. While management is unable to predict the exact outcome of such matters, it is management's current belief, that any potential liabilities resulting from these contingencies, individually or in the aggregate, could have a material impact on the Company's financial position and results of operations.

The regulations governing government reimbursement programs (e.g., Medicaid, Tricare, and Medicare) and commercial payor reimbursement programs are complex and subject to interpretation. As a provider of services to patients covered under government and commercial payor programs, post payment review audits, and other forms of reviews and investigations are routine. The Company believes it complies in all material respects with the statutes, regulations, and other requirements applicable to its laboratory operations.

In April 2018, the Company received a civil investigative demand from an Assistant U.S. Attorney ("AUSA") for the Southern District of New York and a Health Insurance Portability and Accountability Act ("HIPAA") subpoena issued by an AUSA for the Southern District of California. In May 2018, the Company received a subpoena from the State of New York Medicaid Fraud Control Unit. While the Company has not been served with a civil or criminal complaint, it is currently under federal civil and criminal investigations, and state civil investigations, regarding discontinued legacy billing practices for its non-invasive prenatal testing and microdeletion tests and for the provision of potential kickbacks or inducements to physicians and patients. The civil investigations also include inquiries about the Company's laboratory licenses, its enrollment in state Medicaid programs, and the laboratories that performed testing for the Company. The Company has met several times with representatives from the government entities conducting the related investigations, together as a group, to discuss the potential for a global resolution of all issues with all entities, which may include governmental entities and others that are not currently participating in such discussions. The Company proposed to pay a global settlement amount of $15.9 million, with payments to be made in installments over unspecified time periods, to resolve all matters under investigation. Representatives from the government entities did not accept the offer and did not make a counter offer. As a result, the Company has recorded an accrual of $15.9 million associated with a potential settlement. However, the Company has not yet completed negotiations, and there can be no assurance as to whether or when the parties will finalize any such negotiated resolution or what the final terms of such a resolution will be.

The Company cannot provide any assurance as to the ultimate outcome or that an adverse resolution would not have a material adverse effect on the Company's business, financial condition and results of operations.

On June 21, 2018, the Company received a letter from Cigna alleging damages related to contract terms. On December 5, 2018, Cigna and the Company entered into a settlement agreement whereby Avero agreed to pay an aggregate amount of $12.0 million with an upfront payment of $6.0 million and the remaining $6.0 million to be paid over 24 months. For the year ended December 31, 2018, the Company recorded a charge of $12.0 million associated with this claim in its consolidated statements of operations as a reduction to revenue. As of September 30, 2019, the remaining settlement accrual related to Cigna is $3.8 million consisting of $3.0 million in accrued expenses and other current liabilities and $0.8 million in other long-term liabilities.

On June 25, 2018, the Company received a letter from Aetna's external legal counsel that included various allegations relating to the Company's past practices. In November 2019, the Company and Aetna entered into a written settlement agreement for $15.0 million, to be paid in installment payments through December 2020. During the year ended December 31, 2018, the Company recorded a charge of $15.0 million associated with this claim in its consolidated statements of operations as a reduction to revenue. As of September 30, 2019, the Company's accrual consists of $12.5 million in accrued expenses and other current liabilities and $2.5 million in other long-term liabilities.

On October 18, 2018, the Company received a letter from UnitedHealth Group that included various allegations relating to the Company's past practices. On September 30, 2019, the Company entered into a settlement agreement with United HealthCare Services, Inc. and UnitedHealthcare Insurance Company ("United") in which the Company agreed to pay an aggregate amount of $30.0 million. The settlement is to be paid with an upfront payment of $2.0 million, and the remaining balance to be paid every six months starting December 31, 2019, with the first two installment payments of $5.0 million each, and $6.0 million each thereafter. During the nine months ended September 30, 2019, the Company recorded a charge of $3.0 million associated with this claim in its condensed consolidated statements of operations as a reduction to revenue to adjust the accrual to $30.0 million. As of September 30, 2019, the remaining settlement accrual related to United is $28.0 million consisting of $10.0 million in accrued expenses and other current liabilities and $18.0 million in other long-term liabilities.

9. Stockholders' Equity

Common Stock

The Company's certificate of incorporation provides for the authorization to issue 250 million shares of common stock. Each holder of common stock is entitled to one vote per share of common stock held.

Treasury Stock

In June 2014, the Company authorized an Equity Repurchase Program for Key Employees (the "Repurchase Program"). The Repurchase Program allows the Company to repurchase for cash a portion of common stock equity interest of certain employees, provided that (i) no more than 25% of the equity interest of any employee shall be repurchased under the Repurchase Program, (ii) the purchase price to be paid for each share of common stock shall equal the most recent appraisal valuation of the Company's common stock, and (iii) the aggregate repurchases shall not exceed the lesser of (a) equity interest representing, in the aggregate, 5.0 million shares of common stock, (b) a purchase price, in the aggregate, of more than $6.0 million, and (c) the maximum repurchases permitted under the General Corporation Law of the State of Delaware. In addition, it is the Company's practice to require individuals exercising stock options to hold the shares upon exercising for a reasonable period of time in order for the holder to be exposed to the economic risks and rewards of share ownership prior to participating in the Repurchase Program. A reasonable period of time is defined as a period of at least six months and that covers at least two common stock appraisal valuations.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

On December 19, 2017, the Company extended the offer to certain key employees to repurchase up to 3.6 million shares in aggregate at a price of $3.53 per share of Company's common stock. In February 2018, the Company completed the offer and paid an aggregate of $12.5 million to repurchase 3.5 million shares of Company's common stock. At the time of repurchase, the Company's common stock was appraised at $3.18 per share which resulted in a recording of $11.3 million as treasury stock. The difference of $1.2 million was recorded as stock-based compensation expense.

Convertible Preferred Stock

As of December 31, 2018, the Company had outstanding Series A Preferred Stock, Series A-1 Preferred Stock and Series B Preferred Stock outstanding. The Company recorded the preferred stock at fair value on the dates of issuance net of issuance costs.

On August 27, 2019, the Company issued 9.1 million shares of Series B Preferred Stock at an issuance price of $2.75 per share for an aggregate consideration of $25.0 million (the "August 2019 Financing") pursuant to a Series B Preferred Stock Purchase Agreement with a private equity firm. In addition, the Company amended the Series B Preferred Stock Purchase Warrant dated October 27, 2017 to increase the Series B Preferred Stock underlying the Series B Preferred Stock Purchase Warrant from 1.4 million to 1.8 million shares and adjust the exercise price to $2.75 per share. The $25.0 million of proceeds from the August 2019 Financing are allocated among the newly issued Series B Preferred Stock shares and additional shares of Series B Preferred Stock Purchase Warrant at their relative fair values.

In connection with the August 2019 Financing, the board of directors and stockholders approved a 1.28-for-1 stock split for the Company's Series B Preferred Stock and Series B Preferred Stock Purchase Warrant issued and outstanding prior to the August 2019 Financing, which was effected on August 27, 2019 pursuant to an amendment to the amended and restated certificate of incorporation. The conversion price of the Series B Preferred Stock and exercise price of the outstanding Series B Preferred Stock Purchase Warrant was lowered from $3.53 to $2.75 per share. As a result, the Company issued 4.0 million additional shares of Series B Preferred Stock.

On August 27, 2019, the Company entered into an Exchange Agreement with holders of Series A-1 Preferred Stock (the "Exchange Agreement") pursuant to which the outstanding 1,500,000 shares of Series A-1 Preferred Stock were exchanged for 35,664,241 shares of Series B Preferred Stock. The exchange ratio is 1.2 to 1 on as-if converted to 29,720,201 shares of common stock that the Series A-1 Preferred Stock can be converted to, based on the conversion rate of 19.8 to 1. The Company determined that such exchange was a modification to the Series A-1 Preferred Stock. Accordingly, the increase comparing the fair value of the Series B Preferred Stock with the fair value of the Series A-1 Preferred Stock represents a dividend to the preferred stockholders, which was approximately $27.6 million and recorded as an increase to accumulated deficit on the accompanying condensed consolidated statements of stockholders' deficit during the nine months ended September 30, 2019.

The fair value of the preferred stock was estimated using a hybrid between a probability-weighted expected return method ("PWERM") and option pricing model ("OPM"), estimating the probability weighted value across multiple scenarios, while using an OPM to estimate the allocation of value within one or more of these scenarios. Under a PWERM, the value of the Company's various classes of stock was estimated based upon an analysis of future values for the Company assuming various future outcomes, including two IPO scenarios and one scenario contemplating the continued operation of the Company as a privately held enterprise. Guideline public company multiples were used to value the Company under its various scenarios. Share value for each class of stock was based upon the probability-weighted present value of expected future share values, considering each of these possible future outcomes, as well as the rights of each share class.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The significant unobservable inputs into the valuation model used to estimate the fair value of the preferred stock include the timing of potential events (primarily the IPO) and their probability of occurring, the selection of guideline public company multiples, a discount for the lack of marketability of the common stock, and the discount rate used to calculate the present value of the estimated equity value allocated to each share class.

Preferred stock outstanding as of December 31, 2018 and September 30, 2019 consisted of the following (in thousands, except share and per share data):

	December 31, 2018			
	Shares Authorized	Shares Issued and Outstanding	Per Share Price at Issuance	Aggregate Liquidation Preference
Series A	4,120,000	4,120,000	$0.48543	$ 2,000
Series A-1	2,000,000	1,500,000	9.00000	13,500
Series B	15,580,737	14,164,306	3.53000	50,000
Total preferred stock	21,700,737	19,784,306		$ 65,500

	September 30, 2019			
	Shares Authorized	Shares Issued and Outstanding	Per Share Price at Issuance	Aggregate Liquidation Preference
Series A	4,120,000	4,120,000	$0.48543	$ 2,000
Series A-1	1,500,000	—	9.00000	—
Series B	101,118,787	62,936,969	2.75000	173,077
Total preferred stock	106,738,787	67,056,969		$ 175,077

The stockholders of preferred stock have the following rights, preferences, and privileges:

Dividend Rights

The Company cannot declare, pay or set aside any dividends on shares of common stock (other than dividends on shares of common stock payable in shares of common stock) unless the holders of the outstanding preferred stock also receive a dividend in an amount equal to the product of dividend payable on each share of common stock and the number of shares of common stock then issuable upon conversion of such share of preferred stock.

No other dividends can be declared, paid or set aside besides the aforementioned dividends to the convertible preferred stock.

Liquidation Preference

Upon a liquidation event, as defined in the amended and restated certificate of incorporation, the holders of Series A, Series A-1, and Series B Preferred Stock are entitled to receive, prior to and in preference to any distribution of the proceeds of such liquidation to common stockholders, an amount per share equal to $0.48543, $9.0000 and $2.75, respectively, plus any declared but unpaid dividends on such shares. If the proceeds distributed among the holders of the preferred stock are insufficient to permit the Series A, Series A-1, and Series B Preferred Stock holders to receive the full payment noted above, then the entire proceeds legally available for distribution shall be distributed ratably among the holders of the convertible preferred stock in proportion to the full preferential amount that each such holder is otherwise entitled to receive with the holders of Series B Preferred Stock having priority and preference to Series A and Series A-1 Preferred Stock.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Voting Rights

The holders of each share of preferred stock have the right to one vote for each share of common stock into which such preferred stock could then be converted.

Holders of Series A Preferred Stock, or holders of Series A-1 and Series B Preferred Stock voting together as one class, can vote for the number of directors that is proportionate to shares of common stock that each share of preferred stock can be converted into relative to all voting shares, provided at least 2.5 million, 1.0 million and 40.0 million shares of Series A, Series A-1 and Series B Preferred Stock, respectively, are outstanding, and Series A-1 and Series B Preferred Stock taken together constitute at least 10% of the voting shares.

Conversion Rights

Each share of preferred stock is convertible, at the option of the holder, into fully paid and non-assessable shares of common stock determined by dividing the applicable original issue price by the applicable conversion price in effect at the time of conversion. The original issue prices of Series A, Series A-1 and Series B Preferred Stock are $0.48543, $9.00 and $2.75 per share, respectively. The initial conversion prices of Series A, Series A-1 and Series B Preferred Stock are $0.0245, $0.4542365 and $2.75 per share, respectively.

Shares of Series A, Series A-1 and Series B Preferred Stock will be automatically converted into fully paid shares of common stock immediately upon the earlier of: (a) the closing of the sale of shares of common stock to the public at a minimum price of $2.75 per share, subject to appropriate adjustment in the event of any stock dividend, stock split, combination, or other similar recapitalization with respect to common stock, in a firm-commitment underwritten IPO pursuant to an effective registration statement under the Securities Act of 1933, as amended, resulting in at least $50.0 million of gross cash proceeds to the Company (such IPO, a “Qualified IPO”) or (b) at the date specified by written consent, or affirmative vote, or agreement of the holders of at least 75% of Series A Preferred Stock voting as a separate class, and Series A-l and Series B Preferred Stock voting together as a single class.

In the event of the consummation of a Qualified IPO, the conversion price per share of Series B Preferred Stock shall be adjusted to equal the lesser of (1) the then current conversion price per share of Series B Preferred Stock and (2) the “Price to Public” per share of common stock specified in the final prospectus with respect to the Qualified IPO (the “Public Price”).

Or in the event of the consummation of an IPO where the Public Price is less than $3.1625 per share of common stock, subject to appropriate adjustment in the event of any stock dividend, stock split, combination, or other similar recapitalization with respect to common stock, the conversion rate per share of Series B Preferred Stock shall be adjusted, as of immediately prior to the consummation of the Qualified IPO, such that each share of Series B Preferred Stock shall be convertible into a number of shares of common stock equal to the quotient of (1) the Series B Preferred Stock original issue price divided by (2) the Public Price multiplied by 0.865.

Redemption Rights

The Company’s shares of preferred stock are not mandatorily redeemable.

A liquidation event will be deemed to occur upon certain sales and merger of the Company. Such deemed liquidation event will require consent of the majority of the outstanding Series B Preferred Stock, unless the consideration from such event will result into a minimum of $3.30 per share to Series B Preferred Stock or common stock converted into.

Common Stock

The Company reserved shares of common stock, on an as-if-converted basis, for future issuance as follows:

	December 31, 2018	September 30, 2019
Series A Preferred Stock	81,631,494	81,631,494
Series A-1 Preferred Stock	29,720,200	—
Series B Preferred Stock	14,164,306	62,936,969
Series B Preferred Stock Purchase Warrant	1,416,431	1,818,182
Restricted stock units	530,401	1,955,217
Outstanding options to purchase common stock	15,675,439	15,885,473
Options available for future issuance	2,670,974	658,241
Total	145,809,245	164,885,576

10. Stock-based Compensation

On February 22, 2018, the Company adopted the 2018 Equity Incentive Plan (the "2018 Plan"), with 4.4 million shares available for future grant. Upon adoption of the 2018 Plan, no new stock options are issuable under the Second Amended and Restated 2012 Stock Plan (the "2012 Plan") or the 2015 Consultant Stock Plan (the "2015 Plan"). The 2018 Plan is the successor to and continuation of the 2012 Plan, as amended, and the 2015 Plan, and is administered with either stock options or restricted stock units. The 2018 Plan also provides for other types of equity to issue awards, which at this time the Company does not plan to utilize. The 2018 Plan was amended in March 2019 (the "2018 Amended Plan") with 6.7 million shares available for future grant.

On December 5, 2019, the Company adopted the Second Amended and Restated 2018 Equity Incentive Plan (the "2018 Second Amended Plan"), which increased the shares available for future grant to 16.7 million. The Board of Directors administers the plans.

Activity under the 2012 Plan, the 2015 Plan, and the 2018 Amended Plan for the nine months ended September 30, 2019 is set forth below:

	Stock Options Outstanding	Exercise Price	Weighted Average Remaining Contractual Term (Years)
Balance at December 31, 2018	15,675,439	$ 1.18	
Awards authorized	—		
Options granted	2,891,125	2.35	
Options exercised	(2,071,888)	0.26	
Options forfeited	(478,233)	2.57	
Options expired	(130,970)	1.99	
Balance at September 30, 2019	15,885,473	$ 1.44	6.01
Vested and exercisable at September 30, 2019	11,366,654	$ 1.07	4.85
Vested and expected to vest at September 30, 2019	15,282,346	$ 1.44	5.88

Options available for grant totaled 658,241 at September 30, 2019. The aggregate intrinsic value of the shares underlying such options is immaterial at September 30, 2019.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Determining Fair Value of Stock Options—Summary of Assumptions

The Company uses the Black-Scholes option pricing model to estimate the fair value of each option grant on the date of grant or any other measurement date. The following table sets forth the assumptions used to determine the fair value of stock options:

	Nine Months Ended September 30, 2019
Risk-free interest rate	1.4% - 2.4%
Expected volatility	57.0% - 62.0%
Expected dividend yield	—
Expected term (in years)	6.25 years

For the nine months ended September 30, 2018 and 2019, the following table presents total stock-based compensation expense in each functional line item on the consolidated statements of operations (in thousands):

	Nine Months Ended September 30,	
	2018	2019
Cost of sales	$ 646	$ 161
Research and development	494	598
Selling and marketing	912	379
General and administrative	959	645
Total stock-based compensation expense	$ 3,011	$ 1,783

At September 30, 2019, there was $4.7 million unrecognized compensation cost related to unvested stock options, which are expected to be recognized over a remaining weighted average vesting period of 2.8 years.

11. Income Taxes

The Company calculates the interim income tax provision in accordance with Accounting Standard Codification Topic 270, Interim Reporting (“ASC 270”), and Topic 740, Accounting for Income Taxes (“ASC 740”). At the end of each interim period, management estimates the annual effective tax rate and applies such rate to the ordinary quarterly earnings to calculate income tax expense related to ordinary income. Due to the full valuation allowance, the Company has a zero effective tax rate for the nine months ended September 30, 2019. The tax effects of items significant, unusual and infrequent in nature are discretely calculated and recognized in the period in which they occur. The Company did not record discrete items during the nine months ended September 30, 2019.

The Company’s net operating loss (“NOL”) carryforwards and research and expenditure credit carryforwards may be subject to an annual limitation under Section 382 and 383 of the Internal Revenue Code of 1986, as amended (the “Code”), and similar state provisions if the Company experiences one or more ownership changes which would limit the amount of NOL and tax credit carryforwards that can be utilized to offset future taxable income and tax, respectively. In general, an ownership change as defined by Section 382 and 383, results from transactions increasing ownership of certain stockholders or public groups in the stock of the corporation by more than 50 percentage points over a three-year period. Due to the existence of the valuation allowance, limitations created by ownership changes will not impact the Company’s effective tax rate.

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

12. Net Loss Per Share

Net loss per share is computed by dividing net loss attributable to common stockholders for the period by the weighted average number of common shares outstanding during the period. Diluted loss per share reflects the additional dilution from potential issuances of common stock, such as stock issuable pursuant to the exercise of stock options, as well as from the possible conversion of the Company's preferred stock and exercise of the outstanding warrant. The treasury stock and if-converted methods are used to calculate the potential dilutive effect of these common stock equivalents. However, potentially dilutive shares are excluded from the computation of diluted loss per share when their effect is antidilutive. Due to the Company reporting a net loss attributable to common stockholders for all periods presented, all potentially dilutive securities were antidilutive and have been excluded from the computation of diluted loss per share.

The table below provides potentially dilutive securities in equivalent common shares not included in the Company's calculation of diluted loss per share because to do so would be antidilutive:

	Nine Months Ended September 30,	
	2018	2019
Series A Preferred Stock	81,631,494	81,631,494
Series A-1 Preferred Stock	29,720,200	—
Series B Preferred Stock	14,164,306	62,936,969
Series B Preferred Stock Purchase Warrant	1,416,431	1,818,182
Options to purchase common stock	15,765,166	15,885,473
Restricted stock units	502,901	1,955,217
Total	143,200,498	164,227,335

The Company has presented unaudited pro forma basic and diluted net loss per share, which has been computed to give effect to the conversion of all shares of preferred stock into shares of common stock as if such conversion had occurred as of the beginning of the period presented. The following table sets forth the computation of the Company's pro forma basic and diluted net loss per common share (in thousands, except share and per share data):

	Nine Months Ended September 30, 2018	Nine Months Ended September 30, 2019
Numerator:		
Net loss used in computing pro forma per share, basic and diluted	$ (59,761)	$ (141,987)
Denominator:		
Shares used in computing net loss per share, basic and diluted	28,834,005	29,973,919
Pro forma adjustments to reflect assumed conversion of preferred stock	125,516,000	127,888,834
Shares used in computing pro forma net loss per share, basic and diluted	154,350,005	157,862,753
Pro forma basic and diluted net loss per share	$ (0.39)	$ (0.90)

PROGENITY, INC. AND SUBSIDIARIES
NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Pro forma diluted loss per share does not include outstanding stock options, restricted stock units, and the outstanding Series B Preferred Stock Purchase Warrant since the effect would be antidilutive due to the pro forma net loss attributable to common stockholders for the period.

13. Subsequent Events

The Company has evaluated subsequent events from the balance sheet date through December 19, 2019, the date the condensed consolidated financial statements were available to be issued.

On November 12, 2019, the Company entered into a Series B Preferred Stock Purchase Agreement (the "November Series B Preferred Stock Purchase Agreement") with a private equity firm and received $25.0 million (the "November 2019 Financing") in exchange for the issuance of 11.1 million shares of Series B Preferred Stock at a per-share price of $2.25 per share. In connection with the financing, the board of directors and stockholders approved a 1.22-for-1 stock split for the Company's Series B Preferred Stock and Series B Preferred Stock Purchase Warrant issued and outstanding prior to the November 2019 Financing. The conversion price of the Series B Preferred Stock and exercise price of the outstanding Series B Preferred Stock Purchase Warrant was lowered from $2.75 to $2.25 per share. As a result, the Company issued 14.0 million additional shares of Series B Preferred Stock and adjusted the Series B Preferred Stock Purchase Warrant to be a warrant to purchase 2.2 million shares of Series B Preferred Stock.

On November 22, 2019 the Company completed an additional equity financing pursuant to the November Series B Preferred Stock Purchase Agreement with certain existing, accredited investors for an aggregate of approximately $6.1 million in exchange for the issuance of an aggregate of 2.7 million shares of Series B Preferred Stock at a per-share price of $2.25 per share.

On December 19, 2019, the Company completed an additional equity financing pursuant to the November Series B Preferred Stock Purchase Agreement with a private equity firm for $25.0 million in exchange for the issuance of 11.1 million shares of Series B Preferred Stock at a per-share price of $2.25 per share.

Table of Contents

Shares

PROGENITY, INC.

Common Stock

PROSPECTUS

Until , 2020 all dealers that effect transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to the dealers' obligation to deliver a prospectus when acting as underwriters and with respect to their unsold allotments or subscriptions.

, 2020

PART II

INFORMATION NOT REQUIRED IN THE PROSPECTUS

Item 13. Other Expenses of Issuance and Distribution.

The following table sets forth the various expenses, other than underwriting discounts and commissions, payable by the registrant in connection with the sale of common stock being registered. All of the amounts shown are estimated except the Securities and Exchange Commission registration fee and the FINRA filing fee.

	Amount To Be Paid
SEC registration fee	$ *
FINRA filing fee	*
Nasdaq listing fee	*
Printing and engraving expenses	*
Legal fees and expenses	*
Accounting fees and expenses	*
Transfer agent and registrar fees	*
Miscellaneous fees and expenses	*
Total	$ *

* To be completed by amendment.

Item 14. Indemnification of Directors and Officers.

The company is a Delaware corporation. Section 145(a) of the Delaware General Corporation Law, or the DGCL, provides that a Delaware corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative, other than an action by or in the right of the corporation, by reason of the fact that such person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with such action, suit or proceeding if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe his or her conduct was unlawful.

Section 145(b) of the DGCL provides that a Delaware corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor by reason of the fact that such person acted in any of the capacities set forth above, against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection with the defense or settlement of such action or suit if the person acted in good faith and in a manner the person reasonably believed to be in, or not opposed to, the best interests of the corporation, except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation, unless and only to the extent that the Court of Chancery or the court in which such action or suit was brought shall determine, upon application, that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the court shall deem proper.

Further subsections of DGCL Section 145 provide that:

(1) to the extent a present or former director or officer of a corporation has been successful on the merits or otherwise in the defense of any action, suit or proceeding referred to in subsections (i) and (ii) of Section 145 or in the defense of any claim, issue or matter therein, such person shall be indemnified against expenses, including attorneys' fees, actually and reasonably incurred by such person in connection therewith;

(2) the indemnification and advancement of expenses provided for pursuant to Section 145 shall not be deemed exclusive of any other rights to which those seeking indemnification or advancement of expenses may be entitled under any bylaw, agreement, vote of stockholders or disinterested directors or otherwise; and

(3) the corporation shall have the power to purchase and maintain insurance of behalf of any person who is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against any liability asserted against such person and incurred by such person in any such capacity, or arising out of such person's status as such, whether or not the corporation would have the power to indemnify such person against such liability under Section 145.

As used in this Item 14, the term "proceeding" means any threatened, pending or completed action, suit or proceeding, whether or not by or in the right of the company, and whether civil, criminal, administrative, investigative or otherwise.

Section 145 of the DGCL makes provision for the indemnification of officers and directors in terms sufficiently broad to indemnify officers and directors of the company under certain circumstances from liabilities (including reimbursement for expenses incurred) arising under the Securities Act. The company's organizational documents provide, in effect, that, to the fullest extent and under the circumstances permitted by Section 145 of the DGCL, the company will indemnify any and all of its officers and directors. Before the completion of this offering, the company intends to enter into indemnification agreements with its officers and directors. The company may, in its discretion, similarly indemnify its employees and agents. The company's certificate of incorporation also relieves its directors from monetary damages to the company or its stockholders for breach of such director's fiduciary duty as a director to the fullest extent permitted by the DGCL. Under Section 102(b)(7) of the DGCL, a corporation may relieve its directors from personal liability to such corporation or its stockholders for monetary damages for any breach of their fiduciary duty as directors except (i) for a breach of the duty of loyalty, (ii) for failure to act in good faith, (iii) for intentional misconduct or knowing violation of law, (iv) for willful or negligent violations of certain provisions in the DGCL imposing certain requirements with respect to stock repurchases, redemptions and dividends or (v) for any transactions from which the director derived an improper personal benefit.

The company has purchased insurance policies that, within the limits and subject to the terms and conditions thereof, cover certain expenses and liabilities that may be incurred by directors and officers in connection with proceedings that may be brought against them as a result of an act or omission committed or suffered while acting as a director or officer of the company.

The form of Underwriting Agreement, to be entered into in connection with this offering and to be attached as Exhibit 1.1 hereto, provides for the indemnification by the underwriters of us and our officers and directors for certain liabilities, including liabilities arising under the Securities Act, and affords certain rights of contribution with respect thereto.

Item 15. Recent Sales of Unregistered Securities.

Since January 1, 2017, we have made the following sales of unregistered securities:

Issuances of Capital Stock

In October 2017, we issued and sold 14,164,306 shares of our Series B Preferred Stock at a purchase price of $3.53 per share to an investor in exchange for aggregate consideration of $50.0 million, composed of $37.5 million in cash and 3,489,885 shares of our Series A-2 Preferred Stock, which shares were valued in the aggregate at $12.5 million.

In August 2019, we issued and sold 9,090,910 shares of our Series B Preferred Stock at a purchase price of $2.75 per share to an existing investor in exchange for aggregate consideration of $25.0 million in cash. Concurrent with the issuance, we offered all holders of our Series A-1 Preferred Stock the opportunity to exchange their shares of Series A-1 Preferred Stock for Series B Preferred Stock. All holders of Series A-1 Preferred Stock exchanged all of their shares of Series A-1 Preferred Stock (an aggregate amount of 1,500,000 shares) for an aggregate of 35,664,241 shares of Series B Preferred Stock.

In November 2019, we issued and sold an aggregate of 13,833,333 shares of our Series B Preferred Stock at a purchase price of $2.25 per share to existing investors in exchange for aggregate consideration of approximately $31.1 million in cash.

In December 2019, we issued and sold an aggregate of 11,111,111 shares of our Series B Preferred Stock at a purchase price of $2.25 per share to an existing investor in exchange for aggregate consideration of approximately $25.0 million in cash.

The offers, sales, and issuances of the securities listed in this Item 15 under the subheading “Issuances of Capital Stock” were deemed to be exempt from registration under the Securities Act in reliance on Section 4(a)(2) of the Securities Act or Rule 506 of Regulation D promulgated thereunder as transactions by an issuer not involving a public offering. The recipients of securities in each of these transactions acquired the securities for investment only and not with a view to or for sale in connection with any distribution thereof, and appropriate legends were affixed to the securities issued in these transactions. Each of the recipients of securities in these transactions was an accredited investor within the meaning of Rule 501 of Regulation D under the Securities Act.

Grants of Stock Options

Since January 1, 2017, we have granted stock options to purchase an aggregate of shares of our common stock at a weighted average exercise price of $ to employees, directors, and non-employee service providers.

None of the foregoing transactions involved any underwriters, underwriting discounts or commissions, or any public offering. The offers, sales and issuances of the securities listed in this Item 15 under the subheading “Issuances of Capital Stock” were deemed to be exempt from registration under the Securities Act in reliance on Rule 701 promulgated under the Securities Act as offers and sales of securities pursuant to certain compensatory benefit plans and contracts relating to compensation in compliance with Rule 701 or Rule 175.

Item 16. Exhibits and Financial Statement Schedules.

(a) Exhibits

Exhibit Number	Description of Exhibit
1.1*	Form of Underwriting Agreement.
3.1	Sixth Amended and Restated Certificate of Incorporation of the registrant, as currently in effect.
3.2*	Form of Seventh Amended and Restated Certificate of Incorporation of the registrant, to be in effect upon completion of this offering.
3.3	Bylaws of the registrant, as currently in effect.
3.4*	Form of Amended and Restated Bylaws of the registrant, to be in effect upon completion of this offering.
4.1*	Form of common stock certificate of the registrant.
4.2	Series B Preferred Stock Purchase Warrant.
4.3	First Amendment to Series B Preferred Stock Purchase Warrant.
4.4	Fourth Amended and Restated Investors' Rights Agreement, dated as of August 27, 2019, by and among Progenity, Inc. and certain of its stockholders.
5.1*	Opinion of Gibson, Dunn & Crutcher LLP.
10.1*	Form of Indemnification Agreement for directors and executive officers.
10.2+	2011 Incentive Stock Plan.
10.3+	Amended and Restated 2012 Stock Plan.
10.4+	2015 Consultant Stock Plan.
10.5+	Second Amended and Restated 2018 Equity Incentive Plan.
10.6*+	2020 Employee Stock Purchase Plan.
10.7*+	Offer Letter by and between Progenity, Inc. and Eric d'Esparbes, dated as of May 1, 2019.
10.8*+	Offer Letter by and between Progenity, Inc. and Sami Shihabi, dated as of December 13, 2017.
10.9*+	Offer Letter by and between Progenity, Inc. and Matt Cooper, dated as of March 20, 2015.
10.10*+	Offer Letter by and between Progenity, Inc. and Clarke Neumann, dated as of August 26, 2014.
10.11*+	Offer Letter by and between Progenity, Inc. and George Gianakopoulos, dated as of August 29, 2014.
10.12*+	Non-Employee Director Compensation Policy.
10.13*#	Supply & Service Agreement by and between Progenity, Inc. and Illumina, Inc., dated as of November 26, 2014, as amended.
10.14*#	Settlement Agreement by and between Progenity, Inc. and Aetna Health Management, Inc., dated as of November 11, 2019.
10.15*#	Confidential Settlement Agreement and Mutual Release by and among Progenity, Inc., United HealthCare Services, Inc. and UnitedHealthcare Insurance Company, dated as of September 30, 2019.
10.16*#	Settlement and General Release Agreement by and among Progenity, Inc., Connecticut General Life Insurance Company and Cigna Health and Life Insurance Company, dated as of December 5, 2018.
10.17	Credit and Security Agreement by and among Progenity, Inc., as borrower, Athyrium Opportunities III Co-Invest 1 LP, as a lender and collateral agent, and the other lenders party thereto, dated as of October 27, 2017.
21.1	List of subsidiaries.

Exhibit Number	Description of Exhibit
23.1*	Consent of Independent Registered Public Accounting Firm.
23.2*	Consent of Gibson, Dunn & Crutcher LLP (see Exhibit 5.1).
24.1*	Power of Attorney (see signature page hereto).

* To be filed by amendment.
\+ Indicates management contract or compensatory plan.
\# Certain confidential portions of this exhibit were omitted by means of marking such portions with asterisks because the identified confidential portions (i) are not material and (ii) would be competitively harmful if publicly disclosed.

(b) No financial statement schedules are provided because the information called for is not required or is shown in the financial statements or the notes thereto.

Item 17. Undertakings.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this registration statement in reliance on Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be a part of this registration statement as of the time it was declared effective.

(2) For purposes of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

Table of Contents

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Diego, State of California, on the day of , 2020.

Progenity, Inc.

By: _____

Dr. Harry Stylli
Chairman and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Eric d'Esparbes and Clarke W. Neumann, and each of them, as his or her true and lawful attorneys-in-fact and agents, each with full power of substitution and resubstitution, for him or her and in his or her name, place or stead, in any and all capacities (including, without limitation, the capacities listed below), to sign any and all amendments (including post-effective amendments) to this registration statement, and to sign any registration statement for the same offering covered by this registration statement that is to be effective upon filing pursuant to Rule 462(b) promulgated under the Securities Act of 1933, as amended, and all post-effective amendments thereto, and to file the same, with all exhibits thereto and all other documents in connection therewith, with the Securities and Exchange Commission, and hereby grants to such attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates set forth opposite their names.

Signature	Title	Date
Dr. Harry Stylli	Chairman and Chief Executive Officer (*principal executive officer*)	, 2020
Eric d'Esparbes	Chief Financial Officer (*principal financial and accounting officer*)	, 2020
Jeffrey Alter	Director	, 2020
John Bigalke	Director	, 2020
Jeffrey Ferrell	Director	, 2020
Dr. Brian L. Kotzin	Director	, 2020

Table of Contents

Signature	Title	Date
_____ **Dr. Samuel Nussbaum**	Director	, 2020
_____ **Lynne Powell**	Director	, 2020

Exhibit 3.1

SIXTH AMENDED AND RESTATED CERTIFICATE OF INCORPORATION

OF

PROGENITY, INC.

(Pursuant to Sections 242 and 245 of the General Corporation Law of the State of Delaware)

PROGENITY, INC., a corporation organized and existing under and by virtue of the provisions of the General Corporation Law of the State of Delaware (the "General Corporation Law"),

DOES HEREBY CERTIFY:

FIRST: That the name of the corporation is Progenity, Inc., and that the corporation was originally incorporated pursuant to the General Corporation Law on January 9, 2012 under the name Ascendant MDx, Inc.

SECOND: The corporation's Fifth Amended and Restated Certificate of Incorporation (the "Fifth Amended and Restated Certificate of Incorporation") was filed with the Secretary of State of the State of Delaware on August 27, 2019.

THIRD: That the Board of Directors of the corporation duly adopted resolutions proposing to amend and restate the Fifth Amended and Restated Certificate of Incorporation of the corporation, declaring such amendment and restatement to be advisable and in the best interests of the corporation and its stockholders, and authorizing appropriate officers of the corporation to solicit the consent of the stockholders therefor, which resolution setting forth the proposed amendment and restatement is as follows:

RESOLVED, that the Fifth Amended and Restated Certificate of Incorporation of the corporation be amended and restated in its entirety to read as follows:

* * * * * *

ARTICLE I

The name of this corporation is Progenity, Inc. (the "Corporation").

ARTICLE II

The address of the registered office of the Corporation in the State of Delaware and the County of Kent is 850 New Burton Road, Suite 201, Dover, DE 19904 and the name of the registered agent at that address is COGENCY GLOBAL INC.

ARTICLE III

The purpose of the Corporation is to engage in any lawful act or activity for which a corporation may be organized under the General Corporation Law.

ARTICLE IV

(A) **Classes of Stock**. The Corporation is authorized to issue two classes of stock designated as "Common Stock" and "Preferred Stock," respectively. The total number of shares which the Corporation is authorized to issue is 430,155,000 shares, each with a par value of $0.001 per share. 300,000,000 shares shall be Common Stock and 130,155,000 shares shall be Preferred Stock.

(B) **Rights, Preferences and Restrictions of Preferred Stock**. The Preferred Stock authorized by this Sixth Amended and Restated Certificate of Incorporation may be issued from time to time in one or more series. The first series of Preferred Stock shall be designated "Series A Preferred Stock" and shall consist of 4,120,000 shares. The second series of Preferred Stock shall be designated "Series B Preferred Stock" and shall consist of 126,035,000 shares. The rights, preferences, privileges, and restrictions granted to and imposed on the Preferred Stock are as set forth below in this Article IV(B).

1. **Dividends**.

(a) **Dividends with Common Stock**. The Corporation shall not declare, pay or set aside any dividends on shares of Common Stock (other than dividends on shares of Common Stock payable in shares of Common Stock) unless (in addition to the obtaining of any consents required elsewhere in this Sixth Amended and Restated Certificate of Incorporation) the holders of the Preferred Stock then outstanding shall simultaneously receive a dividend on each outstanding share of Preferred Stock in an amount equal to that dividend per share of Preferred Stock as would equal the product of (i) the dividend payable on each share of Common Stock and (ii) the number of shares of Common Stock then issuable upon conversion

of such share of Preferred Stock, in each case calculated on the record date for determination of holders entitled to receive such dividend.

(b) **No Other Dividends**. The Corporation shall not declare, pay or set aside any dividends on shares of Preferred Stock other than in connection with dividends on the Common Stock as set forth in Article IV(B)(1)(a).

2. **Liquidation**.

(a) **Series A Preference**. In the event of any liquidation, dissolution or winding up of the Corporation, either voluntary or involuntary, the holders of Series A Preferred Stock shall be entitled to receive, after the completion of the distribution required by Section 2(b) below, and prior and in preference to any distribution of any of the assets of the Corporation to the holders of Common Stock by reason of their ownership thereof, an amount per share equal to the sum of the Series A Original Issue Price (as defined below), plus declared but unpaid dividends on such share (the amount payable pursuant to this sentence is hereinafter referred to as the "Series A Preference Amount"). For purposes of this Sixth Amended and Restated Certificate of Incorporation, "Series A Original Issue Price" shall mean $0.48543 per share for each share of the Series A Preferred Stock (as adjusted for stock splits, stock dividends, reclassification or the like with respect to such series of Preferred Stock at any time after the Filing Date (as defined below)). If, upon the occurrence of any such liquidation, dissolution or winding up and the completion of the distribution required by Section 2(b) below, the remaining assets of the Corporation legally available for distribution among the holders of the Series A Preferred Stock shall be insufficient to permit the payment to such holders of the full Series A Preference Amount, the entire remaining assets of the Corporation legally available for distribution shall be distributed ratably among the holders of the Series A Preferred Stock, with each such holder receiving the same proportion of the preferential amount such holder would otherwise be entitled to receive upon such distribution if the full preference amount with respect to such holder's shares were paid.

(b) **Series B Preference**. In the event of any liquidation, dissolution or winding up of the Corporation, either voluntary or involuntary, the holders of Series B Preferred Stock shall be entitled to receive, prior and in preference to any distribution of any of the assets of the Corporation to the holders of Common Stock or Series A Preferred Stock, by reason of their ownership thereof, an amount per share equal to the sum of the Series B Original Issue Price (as defined below), plus declared but unpaid dividends on such share (the amount payable pursuant to this sentence is hereinafter referred to as the "Series B Preference Amount"). For purposes of this Sixth Amended and Restated Certificate of Incorporation, "Series B Original Issue Price" shall mean $2.25 per share for each share of the Series B Preferred Stock (as adjusted for stock splits, stock dividends, reclassification or the like with respect to such series of Preferred Stock at any time after the Filing Date), and each of the Series A Original Issue Price and Series B Original Issue Price, an "Original Issue Price." If, upon the occurrence of any such liquidation, dissolution or winding up, the assets of the Corporation legally available for distribution among the holders of the Series B Preferred Stock shall be insufficient to permit the payment to such holders of the full Series B Preference Amount, the entire assets of the Corporation legally available for distribution shall be distributed ratably among the holders of the Series B Preferred Stock, with each such holder receiving the same proportion of the

preferential amount such holder would otherwise be entitled to receive upon such distribution if the full Series B Preference Amount with respect to such holder's shares were paid.

(c) **Remaining Assets**. Upon the completion of the distributions required by Sections 2(a) and 2(b) above, the remaining assets of the Corporation legally available for distribution to stockholders shall be distributed among the holders of the Series A Preferred Stock and the Common Stock pro rata based on the number of shares of Common Stock held by each (assuming conversion of all such Series A Preferred Stock) until the holders of the Series A Preferred Stock shall have received an aggregate of $1.4563 per share for each share of Series A Preferred Stock (as adjusted for stock splits, stock dividends, reclassification and the like with respect to such series of Preferred Stock at any time after the Filing Date) then held by them, plus declared but unpaid dividends (including amounts paid pursuant to Section 2(a) above); thereafter, if assets of the Corporation legally available for distribution remain in the Corporation, the holders of the Common Stock shall receive all of such remaining assets of the Corporation pro rata based on the number of shares of Common Stock held by each.

(d) **Certain Acquisitions**.

(i) **Deemed Liquidation**. For purposes of this Section 2, a liquidation, dissolution, or winding up of the Corporation shall be deemed to occur if the Corporation shall (1) sell, convey, or otherwise dispose of, in a single transaction or series of related transactions, all or substantially all of its assets or business, provided that this Section 2(d)(i)(1) shall not apply to a sale, conveyance or other disposition to a wholly-owned subsidiary of the Corporation, or (2) merge with or into or consolidate with any other corporation, limited liability company or other entity (other than a wholly-owned subsidiary of the Corporation), provided that this Section 2(d)(i)(2) shall not apply to a merger effected exclusively for the purpose of changing the domicile of the Corporation, to an equity financing in which the Corporation is the surviving entity, or to a transaction in which the stockholders of the Corporation immediately prior to the transaction own more than 50% of the voting power of the surviving entity following the transaction; provided, further, that any such sale, conveyance or other disposal as described in Section 2(d)(i)(1) above and any such merger or consolidation as described in Section 2(d)(i)(2) above shall require the consent of a majority of the shares of Series B Preferred Stock then outstanding, voting together as a separate class, unless such deemed liquidation as described in Section 2(d)(i)(1) or (2) above results in consideration of not less than $2.70 per share (as adjusted for stock splits, stock dividends, reclassification or the like with respect to the Series B Preferred Stock at any time after the Filing Date) with respect to each share of Series B Preferred Stock or the Common Stock into which it is then convertible.

(ii) **Valuation of Consideration**. In the event of any liquidation, dissolution or winding up of the Corporation, either voluntary or involuntary, if the consideration received is other than cash, its value will be deemed its fair market value as determined in good faith by the Board of Directors of the Corporation (the "Board of Directors"), provided that any securities shall be valued as follows:

(A) Securities not subject to investment letter or other similar restrictions on free marketability covered by (B) below:

(1) If traded on a securities exchange, the value shall be based on a formula approved by the Board of Directors and derived from the closing prices of the securities on such exchange over a specified time period;

(2) If actively traded over-the-counter, the value shall be based on a formula approved by the Board of Directors and derived from the closing prices of the securities on an applicable market or quotation system over a specified time period; and

(3) If there is no active public market, the value shall be the fair market value thereof, as determined in good faith by the Board of Directors.

(B) The method of valuation of securities subject to investment letter or other restrictions on free marketability (other than restrictions arising solely by virtue of a stockholder's status as an affiliate or former affiliate) shall be to make an appropriate discount from the market value determined as above in Section 2(d)(ii)(A) to reflect the approximate fair market value thereof, as determined in good faith by the Board of Directors.

(iii) **Notice of Transaction**. The Corporation shall give each holder of record of Preferred Stock written notice of any impending liquidation, dissolution, or winding up of the Corporation (including any deemed liquidation) not later than ten (10) days prior to the stockholders' meeting called to approve such transaction, or ten (10) days prior to the closing of such transaction, whichever is earlier, and shall also notify such holders in writing of the final approval of such transaction. The first of such notices shall describe the material terms and conditions of the impending transaction and the provisions of this Section 2, and the Corporation shall thereafter give such holders prompt notice of any material changes in such terms and conditions. The transaction shall in no event take place sooner than ten (10) days after the Corporation has given the first notice provided for herein or sooner than ten (10) days after the Corporation has given notice of any material changes provided for herein; provided, however, that such periods may be shortened upon the written consent of the holders of Preferred Stock that are entitled to such notice rights or similar notice rights and that represent a majority of the voting power of all then outstanding shares of Preferred Stock, voting together as a single class on an as-converted to Common Stock basis.

(iv) **Allocation of Escrow and Contingent Consideration**. In the event of any deemed liquidation as described in Section 2(d)(i) above, if any portion of the consideration payable to the stockholders of the Corporation is placed into escrow and/or is payable to the stockholders of the Corporation subject to contingencies, the acquisition agreement shall provide that (1) the portion of such consideration that is not placed in escrow and not subject to any contingencies (the "Initial Consideration") shall be allocated among the holders of capital stock of the Corporation in accordance with this Section 2 as if the Initial Consideration were the only consideration payable in connection with such deemed liquidation and (2) any additional consideration which becomes payable to the stockholders of the Corporation from time to time upon release from escrow or satisfaction of contingencies shall be allocated among the holders of capital stock of the Corporation in accordance with Section 2 after taking into account the previous payment of the Initial Consideration (and any additional

consideration paid to stockholders of the Corporation prior to such determination time) as part of the same transaction.

(v) **Waiver**. Notwithstanding the foregoing, the distributions by the Corporation upon a deemed liquidation as described in Section 2(d)(i)(1) above may be waived by the vote or written consent of the holders of a majority of the shares of each of the then outstanding series of Preferred Stock, each voting as a separate class.

(vi) **Effect of Noncompliance**. The Corporation shall not have the power to effect any deemed liquidation as described in Section 2(d)(i)(2) above unless the agreement or plan of merger or consolidation for such transaction provides that the consideration payable to the stockholders of the Corporation shall be allocated among the holders of capital stock of the Corporation in accordance with Sections 2(a), (b) and (c). In the event the requirements of this Section 2(d) are not complied with or waived, the Corporation shall forthwith either cause the closing of the transaction to be postponed until such requirements have been complied with or waived, or terminate or cancel such transaction.

3. **Redemption**. The Preferred Stock is not mandatorily redeemable.

4. **Conversion**. The holders of the Preferred Stock shall have conversion rights as follows (the "Conversion Rights"):

(a) **Right to Convert**.

(i) Subject to Section 4(c), each share of Preferred Stock shall be convertible, at the option of the holder thereof, at any time after the date of issuance of such share, at the office of the Corporation or any transfer agent for such stock, into such number of fully paid and nonassessable shares of Common Stock as is determined by dividing the applicable Original Issue Price for such series by the applicable Conversion Price for such series, determined as hereafter provided, in effect on the date the certificate for such share of Preferred Stock is surrendered for conversion (such quotient, as of such time, the "Conversion Rate" for such series). The initial Conversion Price per share of Series A Preferred Stock shall be $0.0245, and the initial Conversion Price per share of Series B Preferred Stock shall be $2.25. Each such initial Conversion Price shall be subject to adjustment as set forth in Sections 4(d) and 4(f).

(ii) In addition, in the event of the consummation of a Qualified IPO (as defined below), the Conversion Price per share of Series B Preferred Stock shall be adjusted, as of immediately prior to the automatic conversion of such shares in accordance with Section 4(b)(i), to equal the lesser of (1) the then current Conversion Price per share of Series B Preferred Stock and (2) the "Price to Public" per share of Common Stock specified in the final prospectus with respect to the Qualified IPO (the "Public Price").

(iii) Notwithstanding anything contained in clause (ii) above, in the event of the consummation of an IPO (as defined below) where the Public Price is less than $2.5875 per share of Common Stock (adjusted for any stock splits, stock dividends, reclassification and the like with respect to the Common Stock at any time after the Filing Date), in lieu of the adjustment set forth in clause (ii), the Conversion Rate per share of Series B Preferred Stock shall be adjusted, as of immediately prior to the consummation of the IPO, such

that each share of Series B Preferred Stock shall be convertible into a number of shares of Common Stock equal to the quotient of (1) the Series B Original Issue Price divided by (2) the Public Price multiplied by 0.865 (for the avoidance of doubt, the adjustment right described in this clause (iii) shall not obligate any holder of Series B Preferred Stock to convert such shares of Series B Preferred Stock into shares of Common Stock unless such IPO is a Qualified IPO).

(b) **Automatic Conversion**. Each share of a series of Preferred Stock shall automatically be converted into shares of Common Stock at the Conversion Rate at the time in effect for the applicable series of Preferred Stock immediately upon the earlier of (i) the closing of the Corporation's sale of its Common Stock in a firm commitment underwritten public offering (an "IPO") pursuant to a registration statement under the Securities Act of 1933, as amended (the "Securities Act"), where the Public Price is not less than $2.25 per share (appropriately adjusted for any stock split, dividend, combination or other recapitalization after the Filing Date) and which results in aggregate cash proceeds to the Corporation of at least $50,000,000 (net of underwriting discounts and commissions) (such IPO, a "Qualified IPO"), or (ii) the date specified by written consent or affirmative vote or agreement of the holders of at least 75% of the then outstanding shares of such series of Preferred Stock, each voting as a separate class. Such conversion shall be deemed to have been made, as applicable, on the date of closing of the IPO or the conversion date described in the stockholder consent, vote or agreement approving such conversion of the applicable series of Preferred Stock, and the persons entitled to receive shares of Common Stock issuable upon such conversion shall be treated for all purposes as the record holders of such shares of Common Stock as of such date.

(c) **Mechanics of Conversion**. Before any holder of Preferred Stock shall be entitled to voluntarily convert the same into shares of Common Stock, such holder shall surrender the certificate or certificates therefor, duly endorsed, at the office of the Corporation or of any transfer agent for such series of Preferred Stock, and shall give written notice to the Corporation at its principal corporate office, of the election to convert the same and shall state therein the name or names in which the certificate or certificates for shares of Common Stock are to be issued. The Corporation shall, as soon as practicable thereafter, issue and deliver at such office to such holder of Preferred Stock, or to the nominee or nominees of such holder, a certificate or certificates for the number of shares of Common Stock to which such holder shall be entitled as aforesaid. Such conversion shall be deemed to have been made immediately prior to the close of business on the date of such surrender of the shares of such series of Preferred Stock to be converted, duly endorsed, and the person or persons entitled to receive the shares of Common Stock issuable upon such conversion shall be treated for all purposes as the record holder or holders of such shares of Common Stock as of such date. If the conversion is in connection with an underwritten offering of securities registered pursuant to the Securities Act the conversion may, at the option of any holder tendering such Preferred Stock for conversion, be conditioned upon the closing with the underwriters of the sale of securities pursuant to such offering, in which event the person(s) entitled to receive Common Stock upon conversion of such Preferred Stock shall not be deemed to have converted such Preferred Stock until immediately prior to the closing of such sale of securities.

(d) **Conversion Price Adjustments of Preferred Stock for Certain Dilutive Issuances, Splits and Combinations**. The Conversion Price of each series of the Preferred Stock shall be subject to adjustment from time to time as follows:

(i) **Issuance of Additional Stock below Purchase Price**. If the Corporation shall issue, on or after November 12, 2019 (the "Filing Date"), any Additional Stock (as defined below) without consideration or for a consideration per share less than the Conversion Price applicable to a series of Preferred Stock in effect immediately prior to the issuance of such Additional Stock, the Conversion Price for such series of Preferred Stock in effect immediately prior to each such issuance shall automatically be adjusted as set forth in this Section 4(d)(i), unless otherwise provided in this Section 4(d)(i).

(A) **Adjustment Formula**. Whenever the Conversion Price for a series of Preferred Stock is adjusted pursuant to this Section (4)(d)(i), the new Conversion Price for such series of Preferred Stock shall be determined in accordance with the following formula:

$$CP_2 = CP_1 * (A + B) \div (A + C).$$

For purposes of the foregoing formula, the following definitions shall apply:

(1) "CP_2" shall mean the Conversion Price for such series of Preferred Stock in effect immediately after such issue of Additional Stock;

(2) "CP_1" shall mean the Conversion Price for such series of Preferred Stock in effect immediately prior to such issue of Additional Stock;

(3) "A" shall mean the number of shares of Common Stock outstanding immediately prior to such issue of Additional Stock (treating for this purpose as outstanding all shares of Common Stock issuable (1) upon exercise of all options and warrants outstanding immediately prior to such issue and (2) upon conversion or exchange of all Preferred Stock outstanding immediately prior to such issue);

(4) "B" shall mean the number of shares of Common Stock that would have been issued if such Additional Stock had been issued at a price per share equal to CP_1 (determined by dividing the aggregate consideration received by the Corporation in respect of such issue by CP_1); and

(5) "C" shall mean the number of shares of such Additional Stock issued in such transaction.

(B) **Definition of "Additional Stock"**. For purposes of this Section 4(d)(i), "Additional Stock" shall mean any shares of Common Stock issued (or deemed to have been issued pursuant to Section 4(d)(i)(E)) by the Corporation after the Filing Date other than:

(1) Common Stock issued pursuant to stock dividends, stock splits or similar transactions, as described in Section 4(d)(ii) hereof;

(2) Shares of Common Stock issued or issuable to employees, consultants or directors of the Corporation or its affiliates pursuant to a stock option plan or restricted stock or restricted stock unit plan approved by the Board of Directors;

(3) Capital stock, or options or warrants to purchase capital stock, issued to financial institutions or lessors in connection with commercial credit arrangements, equipment financings, commercial property lease transactions or similar transactions;

(4) Shares of Common Stock or Preferred Stock issuable upon exercise of warrants outstanding as of the Filing Date, including that certain warrant to purchase up to 2,222,222 shares of Series B Preferred Stock (as may be further adjusted for stock splits, stock dividends, reclassification or the like at any time after the Filing Date in accordance with the terms thereof) issued by the Corporation to Athyrium Opportunities III Co-Invest 1 LP ("Athyrium") as of October 27, 2017 and amended on August 27, 2019;

(5) Capital stock, or warrants or options to purchase capital stock, issued in connection with bona fide acquisitions, mergers or similar transactions, the terms of which are approved by the Board of Directors;

(6) Shares of Common Stock issued or issuable upon conversion of the Preferred Stock, including the Series B Preferred Stock;

(7) Shares of Common Stock issued or issuable in a public offering prior to or in connection with which all outstanding shares of Preferred Stock will be converted to Common Stock;

(8) Capital stock, or options or warrants to purchase capital stock, issued or issuable to an entity as a component of any business relationship with such entity also involving a material marketing, distribution, product development, supply and/or technology licensing arrangement; and

(9) Shares of Common Stock issued or issuable in connection with any transaction where such securities so issued are excepted from the definition of "Additional Stock" by the affirmative vote of a majority of the then outstanding shares of each series of Preferred Stock as to which the Conversion Price would otherwise be adjusted as a result of such transaction, each voting as a separate class.

(C) **No Fractional Adjustments**. No adjustment of the Conversion Price for the Preferred Stock shall be made in an amount less than one cent per share, provided that any adjustments which are not required to be made by reason of this sentence shall be carried forward and shall be either taken into account in any subsequent adjustment made prior to three years from the date of the event giving rise to the adjustment being carried forward, or shall be made at the end of three years from the date of the event giving rise to the adjustment being carried forward.

(D) **Determination of Consideration**. In the case of the issuance of Additional Stock for cash, the consideration shall be deemed to be the amount of cash paid therefor before deducting any reasonable discounts, commissions or other expenses allowed, paid or incurred by the Corporation for any underwriting or otherwise in connection with the issuance and sale thereof. In the case of the issuance of Additional Stock for a consideration in whole or in part other than cash, the consideration other than cash shall be

deemed to be the fair market value thereof as determined by the Board of Directors irrespective of any accounting treatment.

(E) **Deemed Issuances of Common Stock**. In the case of the issuance (whether before, on or after the Filing Date) of options to purchase or rights to subscribe for Common Stock, securities by their terms convertible into or exchangeable for Common Stock or options to purchase or rights to subscribe for such convertible or exchangeable securities, in each case for Common Stock that is Additional Stock, the following provisions shall apply for all purposes of this Section 4(d)(i):

(1) The aggregate maximum number of shares of Common Stock deliverable upon exercise (assuming the satisfaction of any conditions to exercisability, including without limitation, the passage of time, but without taking into account potential antidilution adjustments) of such options to purchase or rights to subscribe for Common Stock shall be deemed to have been issued at the time such options or rights were issued and for a consideration equal to the consideration (determined in the manner provided in Section 4(d)(i)(D)), if any, received by the Corporation upon the issuance of such options or rights plus the minimum exercise price provided in such options or rights (without taking into account potential antidilution adjustments) for the Common Stock covered thereby.

(2) The aggregate maximum number of shares of Common Stock deliverable upon conversion of, or in exchange for (assuming the satisfaction of any conditions to convertibility or exchangeability, including, without limitation, the passage of time, but without taking into account potential antidilution adjustments), any such convertible or exchangeable securities or upon the exercise of options to purchase or rights to subscribe for such convertible or exchangeable securities and subsequent conversion or exchange thereof shall be deemed to have been issued at the time such securities were issued or such options or rights were issued and for a consideration equal to the consideration, if any, received by the Corporation for any such securities and related options or rights (excluding any cash received on account of accrued interest or accrued dividends), plus the minimum additional consideration, if any, to be received by the Corporation (without taking into account potential antidilution adjustments) upon the conversion or exchange of such securities or the exercise of any such related options or rights (the consideration in each case to be determined in the manner provided in Section 4(d)(i)(D)).

(3) In the event of any increase in the number of shares of Common Stock deliverable or decrease in the consideration payable to the Corporation upon exercise of such options or rights or upon conversion of or in exchange for such convertible or exchangeable securities, other than a change resulting from the antidilution provisions thereof, then such options or rights or such convertible or exchangeable securities shall be deemed to have been issued effective upon such increase in the number of shares of Common Stock or decrease in the consideration, and the applicable Conversion Price of each series of the Preferred Stock shall be recomputed to reflect such change, but no further adjustment shall be made for the actual issuance of Common Stock or any payment of such consideration upon the exercise of any such options or rights or the conversion or exchange of such securities, and provided further that to the extent that the applicable Conversion Price of any series of the Preferred Stock had in any way been affected by or computed upon issuance or prior adjustment of such options, rights or

securities, such adjustments shall be recomputed as set forth in subclause (4) below to reflect only that number of shares of Common Stock, if any, actually issued upon the exercise of such options or rights or upon the conversion or exchange of such securities.

(4) Upon the expiration of any such options or rights, the termination of any such rights to convert or exchange or the expiration of any options or rights related to such convertible or exchangeable securities, the Conversion Price of each series of the Preferred Stock, to the extent in any way affected by or computed using such options, rights or securities or options or rights related to such securities, shall be recomputed to reflect the issuance of only the number of shares of Common Stock (and convertible or exchangeable securities which remain in effect) actually issued upon the exercise of such options or rights, upon the conversion or exchange of such securities or upon the exercise of the options or rights related to such securities.

(5) The number of shares of Common Stock deemed issued and the consideration deemed paid therefor pursuant to Sections 4(d)(i)(E)(1) and 4(d)(i)(E)(2) shall be appropriately adjusted to reflect any change, termination or expiration of the type described in either Section 4(d)(i)(E)(3) or 4(d)(i)(E)(4).

(F) **No Increased Conversion Price**. Notwithstanding any other provisions of this Section (4)(d)(i), except to the limited extent provided for in Sections 4(d)(i)(E)(3) and 4(d)(i)(E)(4), no adjustment of the Conversion Price pursuant to this Section 4(d)(i) shall have the effect of increasing the Conversion Price above the Conversion Price in effect immediately prior to such adjustment.

(ii) **Stock Splits and Dividends**. In the event that the Corporation should at any time or from time to time after the Filing Date fix a record date for the effectuation of a split or subdivision of the outstanding shares of Common Stock or the determination of holders of Common Stock entitled to receive a dividend or other distribution payable in additional shares of Common Stock or other securities or rights convertible into, or entitling the holder thereof to receive directly or indirectly, additional shares of Common Stock (hereinafter referred to as "Common Stock Equivalents") without payment of any consideration by such holder for the additional shares of Common Stock or the Common Stock Equivalents (including the additional shares of Common Stock issuable upon conversion or exercise thereof), then, as of such record date (or the date of such dividend distribution, split or subdivision if no record date is fixed), the applicable Conversion Price of each series of Preferred Stock shall be appropriately decreased so that the number of shares of Common Stock issuable on conversion of each share of such series shall be increased in proportion to such increase in the aggregate number of shares of Common Stock outstanding and those issuable with respect to such Common Stock Equivalents, with the number of shares issuable with respect to Common Stock Equivalents determined from time to time in the manner provided for deemed issuances in Section 4(d)(i)(E).

(iii) **Reverse Stock Splits**. If the number of shares of Common Stock outstanding at any time after the Filing Date is decreased by a combination of the outstanding shares of Common Stock, then, following the record date of such combination, the Conversion Price for the Preferred Stock shall be appropriately increased so that the number of

shares of Common Stock issuable on conversion of each share of such series of Preferred Stock shall be decreased in proportion to such decrease in the aggregate number of shares of Common Stock outstanding.

(e) **Other Distributions**. In the event the Corporation shall declare a distribution payable in securities of other persons, evidences of indebtedness issued by the Corporation or other persons, assets (excluding cash dividends) or options or rights not referred to in Section 4(d)(i)(E), then, in each such case for the purpose of this Section 4(e), the holders of Preferred Stock shall be entitled to a proportionate share of any such distribution as though they were the holders of the number of shares of Common Stock into which their shares of Preferred Stock are convertible as of the record date fixed for the determination of the holders of Common Stock entitled to receive such distribution.

(f) **Recapitalizations**. If at any time or from time to time after the Filing Date there shall be a recapitalization of the Common Stock (other than a subdivision, combination or merger or sale of assets transaction provided for elsewhere in this Section 4 or Section 2) provision shall be made so that the holders of the Preferred Stock shall thereafter be entitled to receive upon conversion of such Preferred Stock the number of shares of stock or other securities or property of the Corporation or otherwise, to which a holder of the shares of Common Stock deliverable upon conversion of such Preferred Stock would have been entitled on and at the time of such recapitalization. In any such case, appropriate adjustment shall be made in the application of the provisions of this Section 4 with respect to the rights of the holders of such Preferred Stock after the recapitalization to the end that the provisions of this Section 4 (including adjustment of the Conversion Price then in effect and the number of shares issuable upon conversion of such Preferred Stock) shall be applicable after that event and be as nearly equivalent as practicable.

(g) **No Impairment**. The Corporation will not, by amendment of this Sixth Amended and Restated Certificate of Incorporation (except in accordance with Section 6 hereof and applicable law) or through any reorganization, recapitalization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms to be observed or performed under this Section 4 by the Corporation, but will at all times in good faith assist in the carrying out of all the provisions of this Section 4 and in the taking of all such action as may be necessary or appropriate in order to protect the Conversion Rights of the holders of Preferred Stock against impairment.

(h) **No Fractional Shares and Certificate as to Adjustments**.

(i) No fractional shares shall be issued upon the conversion of any share or shares of the Preferred Stock, and the number of shares of Common Stock to be issued shall be rounded down to the nearest whole share. The number of shares issuable upon such conversion shall be determined on the basis of the total number of shares of Preferred Stock the holder is at the time converting into Common Stock and the number of shares of Common Stock issuable upon such aggregate conversion.

(ii) Upon the occurrence of each adjustment or readjustment of the Conversion Price of any series of Preferred Stock pursuant to this Section 4, the Corporation, at its expense, shall promptly compute such adjustment or readjustment in accordance with the terms hereof and prepare and furnish to each holder of such series of Preferred Stock a certificate setting forth such adjustment or readjustment and showing in detail the facts upon which such adjustment or readjustment is based. The Corporation shall, upon the written request at any time of any holder of a series of Preferred Stock, furnish or cause to be furnished to such holder a like certificate setting forth (A) such adjustment and readjustment, (B) the Conversion Price for such series of Preferred Stock at the time in effect, and (C) the number of shares of Common Stock and the amount, if any, of other property which at the time would be received upon the conversion of a share of such series of Preferred Stock.

(i) **Notices of Record Date**. In the event of any taking by the Corporation of a record of the holders of any class of securities for the purpose of determining the holders thereof who are entitled to receive any dividend (other than a cash dividend) or other distribution, any right to subscribe for, purchase or otherwise acquire any shares of stock of any class or any other securities or property, or to receive any other right, the Corporation shall mail to each holder of Preferred Stock, at least ten (10) business days prior to the date specified therein, a notice specifying the date on which any such record is to be taken for the purpose of such dividend, distribution or right, and the amount and character of such dividend, distribution or right. Nothing herein shall be deemed to limit the obligations of the Corporation to pay the holders of Preferred Stock dividends pursuant to Article IV(B)(1).

(j) **Reservation of Stock Issuable Upon Conversion**. The Corporation shall at all times reserve and keep available out of its authorized but unissued shares of Common Stock, solely for the purpose of effecting the conversion of the shares of the Preferred Stock, such number of its shares of Common Stock as shall from time to time be sufficient to effect the conversion of all outstanding shares of Preferred Stock; and if at any time the number of authorized but unissued shares of Common Stock shall not be sufficient to effect the conversion of all then outstanding shares of Preferred Stock, in addition to such other remedies as shall be available to the holder of Preferred Stock, the Corporation will take such corporate action as may, in the opinion of its counsel, be necessary to increase its authorized but unissued shares of Common Stock to such number of shares as shall be sufficient for such purposes, including, without limitation, engaging in best efforts to obtain the requisite stockholder approval of any necessary amendment to this Sixth Amended and Restated Certificate of Incorporation.

(k) **Notices**. Any notice required by the provisions of this Section 4 to be given to the holders of shares of Preferred Stock shall be deemed given if deposited in the United States mail, postage prepaid, and addressed to each holder of record at its address appearing on the books of the Corporation.

5. **Voting Rights; Directors**.

(a) Except as otherwise expressly provided herein or by law, the holder of each share of Preferred Stock shall have the right to one vote for each share of Common Stock into which such Preferred Stock could then be converted, and with respect to

such vote, such holder shall have full voting rights and powers equal to the voting rights and powers of the holders of Common Stock, and shall be entitled, notwithstanding any provision hereof, to notice of any stockholders' meeting in accordance with the Bylaws of the Corporation, and shall be entitled to vote, together with holders of Common Stock, with respect to any question upon which holders of Common Stock have the right to vote. Fractional votes shall not, however, be permitted and any fractional voting rights available on an as-converted basis (after aggregating all shares into which shares of Preferred Stock held by each holder could be converted) shall be rounded to the nearest whole number (with one-half being rounded upward).

(b) At each meeting of stockholders at which members of the Board of Directors are to be elected, or whenever members of the Board of Directors are to be elected by written consent of the stockholders:

(i) the holders of a majority of the shares of Series A Preferred Stock then outstanding, voting together as a separate class, shall be entitled to elect such number of directors to serve on the Board of Directors as would be proportionate to the shares of Common Stock issuable upon conversion of the Series A Preferred Stock then outstanding relative to all Voting Shares (rounded to the nearest whole person, with one-half being rounded upward, unless such rounding upwards would not enable the Series B Preferred Stock then outstanding, voting together as a class, to elect at least one director), but never less than a majority; provided, that at least 2,500,000 shares of the Series A Preferred Stock are outstanding (as adjusted for stock splits, stock dividends, reclassification or the like with respect to such series of Preferred Stock at any time after the Filing Date);

(ii) the holders of a majority of the shares of Series B Preferred Stock then outstanding shall be entitled to elect such number of directors to serve on the Board of Directors as would be proportionate to the shares of Common Stock issuable upon conversion of the Series B Preferred Stock then outstanding relative to all Voting Shares (rounded to the nearest whole person, with one-half being rounded upward, unless such rounding upwards would not enable the Series A Preferred Stock, voting together as a separate class, to elect a majority of the Board), but never less than one; provided, that (A) at least 40,000,000 shares of the Series B Preferred Stock are outstanding (in each case, as adjusted for stock splits, stock dividends, reclassification or the like with respect to such series of Preferred Stock at any time after the Filing Date), and (B) the outstanding shares of Series B Preferred Stock constitute at least ten percent (10%) of all Voting Shares (provided that this clause (B) shall not apply so long as Athyrium or an affiliate thereof holds a majority of the outstanding Series B Preferred Stock); and

(iii) the holders of a majority of the shares of Common Stock and Preferred Stock then outstanding, voting together as a single class on an as-converted to Common Stock basis, shall be entitled to elect the remaining members of the Board of Directors, if any.

For purposes of this Sixth Amended and Restated Certificate of Incorporation, "Voting Shares" shall mean as of any date, the shares of Common Stock outstanding as of such date and the shares of Common Stock issuable upon conversion of all outstanding shares of Preferred Stock on such date.

(c) In the case of any vacancy in the office of a director occurring among the directors elected by the holders of Series A Preferred Stock, voting together as a separate class, in accordance with the provisions of Section 5(b)(i) above, the remaining director or directors so elected by the holders of Series A Preferred Stock (or, if there is no remaining director, the holders of a majority of the Series A Preferred Stock voting together as a separate class), shall elect a successor or successors to serve for the unexpired term of the director whose office is vacant.

(d) In the case of any vacancy in the office of a director occurring among the director or directors elected by the holders Series B Preferred Stock, voting together as a class, in accordance with the provisions of Section 5(b)(ii) above, the remaining director or directors so elected by the holders of Series B Preferred Stock (or, if there is no remaining director, the holders of a majority of Series B Preferred Stock voting together as a separate class), shall elect a successor or successors to serve for the unexpired term of the director whose office is vacant.

(e) In the case of any vacancy in the office of a director occurring among the director or directors elected by the Common Stock and Preferred Stock, voting together as a single class, in accordance with the provisions of Section 5(b)(iii) above, the remaining director or directors (or, if there is no remaining director, the holders of a majority of the Common Stock and Preferred Stock, voting together as a single class on an as-converted to Common Stock basis), shall elect a successor or successors to serve for the unexpired term of the director whose office is vacant.

6. **Protective Provisions**.

(a) So long as shares of Preferred Stock convertible into at least 30,000,000 shares of Common Stock are outstanding (as appropriately adjusted for stock splits, stock dividends, reclassification or the like at any time after the Filing Date), the Corporation shall not, either directly or indirectly by amendment, merger, consolidation or otherwise, do any of the following without first obtaining the approval (by vote or written consent, as provided by law) of the holders of a majority of the then outstanding shares of Preferred Stock, voting together as a class on an as converted to Common Stock basis:

(i) effect a transaction described in Section 2(d)(i) above;

(ii) authorize or issue, or obligate itself to issue, any other equity security, including any security (other than Series A Preferred Stock and/or Series B Preferred Stock) convertible into or exercisable for any equity security, being on a parity with the Series A Preferred Stock and/or Series B Preferred Stock with respect to voting, dividends, redemption, conversion or upon liquidation; or

(iii) redeem, purchase or otherwise acquire (or pay into or set funds aside for a sinking fund for such purpose) any share or shares of Preferred Stock or Common Stock; provided, however, that this restriction shall not apply to the repurchase of shares of Common Stock from employees, officers, directors, consultants or other persons (other than Harry Stylli) performing services for the Corporation or any subsidiary pursuant to

agreements under which the Corporation has the option to repurchase such shares at cost upon the occurrence of certain events, such as the termination of employment, or through the exercise of any right of first refusal.

(b) So long as at least 2,500,000 shares of Series A Preferred Stock are outstanding (as adjusted for stock splits, stock dividends, reclassification or the like with respect to such series of Preferred Stock at any time after the Filing Date), the Corporation shall not, either directly or indirectly by amendment, merger, consolidation or otherwise, do any of the following without first obtaining the approval (by vote or written consent, as provided by law) of the holders of a majority of the then outstanding shares of Series A Preferred Stock, voting together as a separate class:

(i) alter or change the rights, preferences or privileges of the shares of Series A Preferred Stock by amendment of this Sixth Amended and Restated Certificate of Incorporation or the Bylaws of the Corporation, so as to affect adversely the shares of such series;

(ii) increase or decrease (other than by redemption or conversion) the total number of authorized shares of Series A Preferred Stock or Series B Preferred Stock; or

(iii) authorize or issue, or obligate itself to issue, any other equity security, including any security convertible into or exercisable for any equity security, having a preference over the Series A Preferred Stock with respect to voting, dividends, redemption or upon liquidation (for the avoidance of doubt, the designation of a new series of Preferred Stock that is *pari passu* or junior to the Series A Preferred Stock shall not require approval pursuant to this Section 6(b)).

(c) So long as at least 40,000,000 shares of Series B Preferred Stock are outstanding (as adjusted for stock splits, stock dividends, reclassification or the like with respect to such series of Preferred Stock at any time after the Filing Date), the Corporation shall not, either directly or indirectly by amendment, merger, consolidation or otherwise, do any of the following without first obtaining the approval (by vote or written consent, as provided by law) of the holders of a majority of the then outstanding shares of Series B Preferred Stock, voting together as a separate class:

(i) alter or change the rights, preferences or privileges of the shares of Series B Preferred Stock by amendment of this Sixth Amended and Restated Certificate of Incorporation or the Bylaws of the Corporation, so as to affect adversely the shares of such series;

(ii) increase or decrease (other than by redemption or conversion) the total number of authorized shares of Series A Preferred Stock or Series B Preferred Stock;

(iii) authorize or issue, or obligate itself to issue, any other equity security, including any security convertible into or exercisable for any equity security, having a preference over the Series B Preferred Stock with respect to voting, dividends,

redemption or upon liquidation (for the avoidance of doubt, the designation of a new series of Preferred Stock that is *pari passu* or junior to the Series B Preferred Stock shall not require approval pursuant to this Section 6(c));

(iv) enter into any transaction with (A) Harry Stylli, (B) any Affiliate or Immediate Family Member (as such terms are defined in the Fourth Amended and Restated Investors' Rights Agreement, dated as of August 27, 2019, among the Corporation and the stockholders of the Corporation named therein) of Harry Stylli or (C) any other individual, corporation, partnership, trust, limited liability company, association or other entity with respect to which Harry Stylli, beneficially owns directly or indirectly, (1) in the aggregate more than 35% of the economic interests, or (2) the power to elect or appoint more than 35% of the members of the board of directors thereof (or equivalent governing body) (each person or entity described in this clause (iv), a "Stylli Party");

(v) (1) sell, convey, or otherwise dispose of, in a single transaction or series of related transactions, the Corporation's assets, including the equity of any of the Corporation's subsidiaries, or (2) acquire, merge or amalgamate with or into or consolidate with any other corporation, limited liability company or other entity (other than a wholly-owned subsidiary of the Corporation), in each case, where such transaction or series of related transactions has an aggregate value (including the value of any shares exchanged by the Corporation) of at least $10 million and is not in the ordinary course of business (each, as determined in good faith by the Board of Directors); provided, that this Section 6(c)(v) shall not apply to a merger effected exclusively for the purpose of changing the domicile of the Corporation; or

(vi) enter into any financing transaction that results in the Corporation's securities trading on a public stock exchange, other than a Qualified IPO.

7. **Status of Converted and Reacquired Stock**. In the event any shares of Preferred Stock shall be converted pursuant to Section 4 hereof or shall be reacquired by the Corporation (via exchange, repurchase, redemption or otherwise), the shares so converted or reacquired shall be automatically retired and cancelled and may not be reissued by the Corporation. Following any such conversion or reacquisition of shares of Preferred Stock, the Corporation shall, without further action of its stockholders, file with the Delaware Secretary of State a certificate identifying the shares of Preferred Stock so converted or reacquired and stating that their reissuance is prohibited under this Sixth Amended and Restated Certificate of Incorporation, which upon filing shall have the effect of amending this Sixth Amended and Restated Certificate of Incorporation to reduce the number of authorized shares of the series to which such shares belong, and, if such retired shares constitute all the shares of such series, eliminating from this Sixth Amended and Restated Certificate of Incorporation all reference to such series of Preferred Stock.

(C) **Common Stock**. The rights, preferences, privileges and restrictions granted to and imposed on the Common Stock are as set forth below in this Article IV(C).

1. **Dividend Rights**. Subject to the prior rights of holders of all classes of stock at the time outstanding having prior rights as to dividends, the holders of the Common

Stock shall be entitled to receive, if, when and as declared by the Board of Directors, out of any assets of the Corporation legally available therefor, such dividends as may be declared from time to time by the Board of Directors.

2. **Liquidation Rights**. Upon the liquidation, dissolution or winding up of the Corporation, the assets of the Corporation shall be distributed as provided in Article IV(B)(2).

3. **Redemption**. The Common Stock is not mandatorily redeemable.

4. **Voting Rights**. Each holder of Common Stock shall have the right to one vote per share of Common Stock, and shall be entitled to notice of any stockholders' meeting in accordance with the Bylaws of the Corporation, and shall be entitled to vote upon such matters and in such manner as may be provided by law. Notwithstanding the foregoing, the number of authorized shares of Common Stock may be increased or decreased (but not below the number of shares thereof then outstanding) by (in addition to any vote of the holders of Preferred Stock that may be required by the terms of this Sixth Amended and Restated Certificate of Incorporation) the affirmative vote of the holders of Voting Shares representing a majority of all outstanding Voting Shares, irrespective of the provisions of Section 242(b)(2) of the General Corporation Law.

(D) **Share Split**. Upon this Sixth Amended and Restated Certificate of Incorporation becoming effective pursuant to the General Corporation Law (the "Effective Time"), each one (1) share of Series B Preferred Stock, par value $0.001 per share, issued and outstanding immediately prior to the Effective Time (the "Old Series B Preferred Stock") shall automatically without further action on the part of the Corporation or any holder of Old Series B Preferred Stock, be reclassified, subdivided and changed into 1.22222222 shares of Series B Preferred Stock, par value $0.001 per share, of the Corporation (the "New Series B Preferred Stock"). From and after the Effective Time, certificates (if any) representing the Old Series B Preferred Stock shall represent the number of whole shares of New Series B Preferred Stock into which such shares shall have been reclassified, subdivided and changed pursuant to this Sixth Amended and Restated Certificate of Incorporation. Any fractional share resulting from such reclassification, subdivision and change shall be rounded downward to the nearest whole share.

ARTICLE V

The number of directors which shall constitute the Board of Directors shall consist of not less than three (3) nor more than nine (9) persons. The number of directors shall initially be seven (7) and, thereafter, shall be fixed, within the limits set forth in the preceding sentence, exclusively by one or more resolutions adopted from time to time by the affirmative vote of a majority of the Board of Directors.

ARTICLE VI

Except as otherwise provided in this Sixth Amended and Restated Certificate of Incorporation, in furtherance and not in limitation of the powers conferred by statute, the Board of Directors is expressly authorized to make, alter or repeal the Bylaws of the Corporation.

ARTICLE VII

Elections of directors need not be by written ballot unless otherwise provided in the Bylaws of the Corporation.

ARTICLE VIII

To the fullest extent permitted by law, a director of the Corporation shall not be personally liable to the Corporation or its stockholders for monetary damages for breach of fiduciary duty as a director. If the General Corporation Law is amended after approval by the stockholders of this Article VIII to authorize corporate action further eliminating or limiting the personal liability of directors, then the liability of a director of the Corporation shall be eliminated or limited to the fullest extent permitted by the General Corporation Law as so amended.

The right to exculpation conferred in this Article VIII shall be a contract between the Corporation and each director who is covered by this Article VIII while this Sixth Amended and Restated Certificate of Incorporation is in effect. Any repeal or modification of the foregoing provisions of this Article VIII by the stockholders of the Corporation shall not adversely affect any right or protection of a director of the Corporation existing at the time of, or increase the liability of any director of the Corporation with respect to any acts or omissions occurring prior to, such repeal or modification. Notwithstanding the foregoing provisions of this Article VIII, any right or protection provided hereunder shall be deemed to vest at the time that the act or omission occurred.

ARTICLE IX

The following indemnification provisions shall apply to the persons enumerated below.

1. Right to Indemnification of Directors and Officers. The Corporation shall indemnify and hold harmless, to the fullest extent permitted by applicable law as it presently exists or may hereafter be amended, any person (an "Indemnified Person") who was or is made or is threatened to be made a party or is otherwise involved in any action, suit or proceeding, whether civil, criminal, administrative or investigative (a "Proceeding"), by reason of the fact that such person is or was a director or officer of the Corporation or, while a director or officer of the Corporation, is or was serving at the request of the Corporation as a director, officer, employee or agent of another corporation or of a partnership, joint venture, limited liability company, trust, enterprise or other entity, including service with respect to employee benefit plans, against all liability and loss suffered and expenses (including attorneys' fees) reasonably incurred by such Indemnified Person in such Proceeding. Notwithstanding the preceding sentence, except as otherwise provided in Section 3 of this Article IX, the Corporation shall be required to indemnify an Indemnified Person in connection with a Proceeding (or part thereof) commenced by such Indemnified Person only if

the commencement of such Proceeding (or part thereof) by the Indemnified Person was authorized in advance by the Board of Directors.

2. Prepayment of Expenses of Directors and Officers. The Corporation shall pay the expenses (including attorneys' fees) incurred by an Indemnified Person in defending any Proceeding in advance of its final disposition, provided, however, that such payment of expenses in advance of the final disposition of the Proceeding shall be made only upon receipt of an undertaking by or on behalf of the Indemnified Person to repay all amounts advanced if it should be ultimately determined that the Indemnified Person is not entitled to be indemnified under this Article IX or otherwise.

3. Claims by Directors and Officers. If a claim for indemnification or advancement of expenses under this Article IX is not paid in full within 30 days after a written claim therefor by the Indemnified Person has been received by the Corporation, the Indemnified Person may file suit to recover the unpaid amount of such claim and, if successful in such suit, in whole or in part, shall be entitled to be paid the expense of prosecuting such claim. In any such action the Corporation shall have the burden of proving that the Indemnified Person is not entitled to the requested indemnification or advancement of expenses under applicable law.

4. Indemnification of Employees and Agents. The Corporation may indemnify and advance expenses to any person who was or is made or is threatened to be made or is otherwise involved in any Proceeding by reason of the fact that such person is or was an employee or agent of the Corporation or, while an employee or agent of the Corporation, is or was serving at the request of the Corporation as a director, officer, employee or agent of another corporation or of a partnership, joint venture, limited liability company, trust, enterprise or nonprofit entity, including service with respect to employee benefit plans, against all liability and loss suffered and expenses (including attorneys' fees) reasonably incurred by such person in connection with such Proceeding. The ultimate determination of entitlement to indemnification of persons who are non-director or officer employees or agents of the Corporation shall be made in such manner as is determined by the Board of Directors in its sole discretion. Without limiting the foregoing, the Corporation shall not be required to indemnify any such person in connection with a Proceeding initiated by such person if the Proceeding was not authorized in advance by the Board of Directors.

5. Advancement of Expenses of Employees and Agents. The Corporation may pay the expenses (including attorneys' fees) incurred by an employee or agent in defending any Proceeding in advance of its final disposition on such terms and conditions as may be determined by the Board of Directors.

6. Non-Exclusivity of Rights. The rights conferred on any person by this Article IX shall not be exclusive of any other rights which such person may have or hereafter acquire under any statute, any other provision of this Sixth Amended and Restated Certificate of Incorporation, the Bylaws of the Corporation, agreement, vote of stockholders or disinterested directors or otherwise.

7. Other Indemnification. Subject to Section 9 of this Article IX, the Corporation's obligation, if any, to indemnify any person who was or is serving at its request as a director, officer or employee of another corporation, partnership, limited liability company, joint venture, trust, organization or other enterprise shall be reduced by any amount such person may collect as indemnification from such other corporation, partnership, limited liability company, joint venture, trust, organization or other enterprise.

8. Insurance. The Board of Directors may, to the full extent permitted by applicable law as it presently exists, or may hereafter be amended from time to time, authorize an appropriate officer or officers to purchase and maintain at the Corporation's expense insurance: (a) to indemnify the Corporation for any obligation that it incurs as a result of the indemnification of directors, officers, employees, and agents under the provisions of this Article IX; and (b) to indemnify or insure directors, officers, employees, and agents against liability asserted against such person and incurred by such person in any such capacity, or arising out of such person's status as such, whether or not the Corporation would have the power to indemnify such person against such liability under the provisions of this Article IX.

9. Primacy of Corporation's Indemnification Obligation. The Corporation shall be the indemnitor of first resort for any director who is entitled to indemnification and advancement pursuant to this Article IX (i.e., the Corporation's obligations to indemnify a director shall be primary and any obligation of any third party employer or affiliate of such director to advance expenses or to provide indemnification for the same expenses or liabilities incurred by such director are secondary) and it shall be required to advance the full amount of expenses incurred by such director and shall be liable for the full amount of all expenses, judgments, penalties, fines and amounts paid in settlement to the extent legally permitted and as required by this Sixth Amended and Restated Certificate of Incorporation (or any other agreement between the Corporation and such director), without regard to any rights such director may have against any third party employer or affiliate of such director.

10. Amendment or Repeal. The right to indemnification and advancement conferred in this Article IX shall be a contract between the Corporation and each person who is covered by this Article IX while this Sixth Amended and Restated Certificate of Incorporation is in effect. Any repeal or modification of the provisions of this Article IX shall not adversely affect any right or protection hereunder of any person who is covered by this Article IX in respect of any Proceeding (regardless of when such Proceeding is first threatened, commenced or completed) arising out of, or related to, any act or omission occurring prior to the time of such repeal or modification. Notwithstanding the foregoing provisions of this Article IX, any right or protection provided hereunder shall be deemed to vest at the time that the act or omission occurred, irrespective of when and whether a Proceeding challenging such act or omission is first threatened or commenced. The rights provided hereunder shall inure to the benefit of any Indemnified Person and such person's heirs, executors, administrators and other legal representatives.

ARTICLE X

The Corporation renounces, to the fullest extent permitted by law, any interest or expectancy of the Corporation in, or in being offered an opportunity to participate in, any

Excluded Opportunity. An "Excluded Opportunity" is any matter, transaction or interest that is presented to, or acquired, created or developed by, or which otherwise comes into the possession of a Covered Person (as defined below), unless such matter, transaction or interest is presented to, or acquired, created or developed by, or otherwise comes into the possession of, a Covered Person expressly and solely in such Covered Person's capacity as an officer or director of the Corporation. For purposes of this Article X, a "Covered Person" shall mean (i) any director of the Corporation, or (ii) any holder of Preferred Stock or any partner, member, director, stockholder, employee or agent of any such holder.

ARTICLE XI

(A) Forum. Unless the Corporation, in writing, selects or consents to the selection of an alternative forum, the sole and exclusive forum for any current or former stockholder (including any current or former beneficial owner) to bring internal corporate claims (as defined below), to the fullest extent permitted by law, and subject to applicable jurisdictional requirements, shall be the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, another state or federal court located within the State of Delaware). For purposes of this Article XI, "internal corporate claims" means claims, including claims in the right of the Corporation: (a) that are based upon a violation of a duty by a current or former director, officer, employee or stockholder in such capacity, or (b) as to which the General Corporation Law confers jurisdiction upon the Court of Chancery. If any action the subject matter of which is within the scope of this Article XI is filed in a court other than the Court of Chancery (or, if the Court of Chancery does not have jurisdiction, another state or federal court located within the State of Delaware) (a "Foreign Action") by any current or former stockholder (including any current or former beneficial owner), such stockholder shall be deemed to have consented to: (i) the personal jurisdiction of the Court of Chancery (or such other state or federal court located within the State of Delaware, as applicable) in connection with any action brought in any such court to enforce this Article XI, and (ii) having service of process made upon such stockholder in any such action by service upon such stockholder's counsel in the Foreign Action as agent for such stockholder.

(B) Enforceability. If any provision of this Article XI shall be held to be invalid, illegal or unenforceable as applied to any person or entity or circumstance for any reason whatsoever, then, to the fullest extent permitted by law, the validity, legality and enforceability of such provision in any other circumstance and of the remaining provisions of this Article XI (including, without limitation, each portion of any sentence of this Article XI containing any such provision held to be invalid, illegal or unenforceable that is not itself held to be invalid, illegal or unenforceable) and the application of such provision to other persons or entities or circumstances shall not in any way be affected or impaired thereby.

* * * * * *

FOURTH: That the foregoing amendment and restatement was approved by the holders of the requisite number of shares of the corporation in accordance with Section 228 of the General Corporation Law.

FIFTH: That this Sixth Amended and Restated Certificate of Incorporation, which restates and integrates and further amends the provisions of the corporation's Certificate of Incorporation, as amended, has been duly adopted in accordance with Sections 242 and 245 of the General Corporation Law.

IN WITNESS WHEREOF, this Sixth Amended and Restated Certificate of Incorporation has been executed by a duly authorized officer of the corporation on this 12th day of November, 2019.

By: /s/ Eric d'Esparbes
Eric d'Esparbes
Chief Financial Officer

[SIGNATURE PAGE TO SIXTH AMENDED AND RESTATED CERTIFICATE OF INCORPORATION OF PROGENITY, INC.]

BYLAWS OF ASCENDANT MDX, INC.

ARTICLE I
STOCKHOLDERS

1.1 Place of Meetings. All meetings of stockholders shall be held at such place within or without the State of Delaware as may be designated from time to time by the Board of Directors, the Chairman, the President or Chief Executive Officer.

1.2 Annual Meeting. The annual meeting of stockholders for the election of directors and for the transaction of such other business as may properly be brought before the meeting shall be held on a date to be fixed by the Board of Directors at the time and place to be fixed by the Board of Directors and stated in the notice of the meeting.

1.3 Special Meetings. Special meetings of stockholders may be called at any time by the Board of Directors, the Chairman of the Board or the President or the holders of record of not less than 10% of all shares entitled to cast votes at the meeting, for any purpose or purposes prescribed in the notice of the meeting and shall be held at such place, on such date and at such time as the Board of Directors may fix. Business transacted at any special meeting of stockholders shall be confined to the purpose or purposes stated in the notice of meeting.

1.4 Notice of Meetings.

(a) Written notice of each meeting of stockholders, whether annual or special, shall be given not less than 10 nor more than 60 days before the date on which the meeting is to be held, to each stockholder entitled to vote at such meeting, except as otherwise provided herein or as required by law (meaning here and hereafter, as required from time to time by the Delaware General Corporation Law or the Certificate of Incorporation). The notice of any meeting shall state the place, if any, date and hour of the meeting, and the means of remote communication, if any, by which stockholders and proxy holders may be deemed to be present in person and vote at such meeting. The notice of a special meeting shall state, in addition, the purpose or purposes for which the meeting is called.

(b) Notice to stockholders may be given by personal delivery, mail, or, with the consent of the stockholder entitled to receive notice, by facsimile or other means of electronic transmission. If mailed, such notice shall be delivered by postage prepaid envelope directed to each stockholder at such stockholder's address as it appears in the records of the corporation and shall be deemed given when deposited in the United States mail. Notice given by electronic transmission pursuant to this subsection shall be deemed given: (1) if by facsimile telecommunication, when directed to a facsimile telecommunication number at which the stockholder has consented to receive notice; (2) if by electronic mail, when directed to an electronic mail address at which the stockholder has consented to receive notice; (3) if by posting on an electronic network together with separate notice to the stockholder of such specific posting, upon the later of (A) such posting and (B) the giving of such separate notice; and (4) if by any other form of electronic transmission, when directed to the stockholder. An affidavit of

the secretary or an assistant secretary or of the transfer agent or other agent of the corporation that the notice has been given by personal delivery, by mail, or by a form of electronic transmission shall, in the absence of fraud, be prima facie evidence of the facts stated therein.

(c) Notice of any meeting of stockholders need not be given to any stockholder if waived by such stockholder either in a writing signed by such stockholder or by electronic transmission, whether such waiver is given before or after such meeting is held. If such a waiver is given by electronic transmission, the electronic transmission must either set forth or be submitted with information from which it can be determined that the electronic transmission was authorized by the stockholder.

1.5 Voting List. The officer of the corporation who has charge of the stock ledger of the corporation shall prepare, at least 10 days before each meeting of stockholders, a complete list of the stockholders entitled to vote at the meeting, arranged in alphabetical order, and showing the address of each stockholder and the number of shares registered in the name of each stockholder. Such list shall be open to the examination of any stockholder, for any purpose germane to the meeting, during ordinary business hours, for a period of at least 10 days prior to the meeting, in the manner provided by law. The list shall also be produced and kept at the time and place of the meeting during the whole time of the meeting, and may be inspected by any stockholder who is present. This list shall determine the identity of the stockholders entitled to vote at the meeting and the number of shares held by each of them.

1.6 Quorum. Except as otherwise provided by law or these Bylaws, the holders of a majority of the shares of the capital stock of the corporation entitled to vote at the meeting, present in person or represented by proxy, shall constitute a quorum for the transaction of business. Where a separate class vote by a class or classes or series is required, a majority of the shares of such class or classes or series present in person or represented by proxy shall constitute a quorum entitled to take action with respect to that vote on that matter.

1.7 Adjournments. Any meeting of stockholders may be adjourned to any other time and to any other place at which a meeting of stockholders may be held under these Bylaws by the Chairman of the meeting or, in the absence of such person, by any officer of the corporation entitled to preside at or to act as Secretary of such meeting, or by the holders of a majority of the shares of stock present or represented at the meeting and entitled to vote, although less than a quorum. When a meeting is adjourned to another place, date or time, written notice need not be given of the adjourned meeting if the date, time and place, if any, thereof, and the means of remote communication, if any, by which stockholders and proxy holders may be deemed to be present in person and vote at such adjourned meeting, are announced at the meeting at which the adjournment is taken; provided, however, that if the date of any adjourned meeting is more than 30 days after the date for which the meeting was originally noticed, or if a new record date is fixed for the adjourned meeting in accordance with Section 4.5, written notice of the place, if any, date and time of the adjourned meeting and the means of remote communication, if any, by which stockholders and proxy holders may be deemed to be present in person and vote at such adjourned meeting, shall be given in conformity herewith. At the adjourned meeting, the corporation may transact any business which might have been transacted at the original meeting.

1.8 Voting and Proxies. Each stockholder shall have one vote for each share of stock entitled to vote held of record by such stockholder and a proportionate vote for each fractional share so held, unless otherwise provided by law or in the Certificate of Incorporation. Each stockholder of record entitled to vote at a meeting of stockholders may vote in person or may authorize any other person or persons to vote or act for him by written proxy executed by the stockholder or his authorized agent or by a transmission permitted by law and delivered to the Secretary of the corporation. Any copy, facsimile transmission or other reliable reproduction of the writing or transmission created pursuant to this section may be substituted or used in lieu of the original writing or transmission for any and all purposes for which the original writing or transmission could be used, provided that such copy, facsimile transmission or other reproduction shall be a complete reproduction of the entire original writing or transmission.

1.9 Action at Meeting.

(a) At any meeting of stockholders for the election of one or more directors at which a quorum is present, the election shall be determined by a plurality of the votes cast by the stockholders entitled to vote at the election, except when a different vote is required by express provision of law, the Certificate of Incorporation or these Bylaws.

(b) All other matters shall be determined by a majority in voting power of the shares present in person or represented by proxy and entitled to vote on the matter (or if there are two or more classes of stock entitled to vote as separate classes, then in the case of each such class, a majority of the shares of each such class present in person or represented by proxy and entitled to vote on the matter shall decide such matter), provided that a quorum is present, except when a different vote is required by express provision of law, the Certificate of Incorporation or these Bylaws.

(c) All voting, including on the election of directors, but excepting where otherwise required by law, may be by a voice vote; provided, however, that upon demand therefor by a stockholder entitled to vote or his proxy, a vote by ballot shall be taken. Each ballot shall state the name of the stockholder or proxy voting and such other information as may be required under the procedure established for the meeting. The corporation may, and to the extent required by law, shall, in advance of any meeting of stockholders, appoint one or more inspectors to act at the meeting and make a written report thereof. The corporation may designate one or more persons as an alternate inspector to replace any inspector who fails to act. If no inspector or alternate is able to act at a meeting of stockholders, the person presiding at the meeting may, and to the extent required by law, shall, appoint one or more inspectors to act at the meeting. Each inspector, before entering upon the discharge of his duties, shall take and sign an oath to faithfully execute the duties of inspector with strict impartiality and according to the best of his ability.

1.10 Conduct of Business. At every meeting of the stockholders, the Chairman of the Board, or, in his absence, the Chief Executive Officer, if any, or in his absence, the President, if any, or, in his absence such other person as may be appointed by the Board of Directors, shall act as chairman. The Secretary of the corporation or a person designated by the chairman of the meeting shall act as secretary of the meeting. Unless otherwise approved by the chairman of the meeting, attendance at the stockholders' meeting is restricted to stockholders of record, persons

authorized in accordance with Section 1.8 of these Bylaws to act by proxy, and officers of the corporation.

The chairman of the meeting shall call the meeting to order, establish the agenda, and conduct the business of the meeting in accordance therewith or, at the chairman's discretion, it may be conducted otherwise in accordance with the wishes of the stockholders in attendance. The date and time of the opening and closing of the polls for each matter upon which the stockholders will vote at the meeting shall be announced at the meeting.

1.11 Stockholder Action Without Meeting. Any action which may be taken at any annual or special meeting of stockholders may be taken without a meeting and without prior notice, if a consent in writing, setting forth the actions so taken, is signed by the holders of outstanding shares having not less than the minimum number of votes that would be necessary to authorize or take such action at a meeting at which all shares entitled to vote thereon were present and voted. All such consents shall be filed with the Secretary of the corporation and shall be maintained in the corporate records. Prompt notice of the taking of a corporate action without a meeting by less than unanimous written consent shall be given to those stockholders who have not consented in writing.

An electronic transmission consenting to an action to be taken and transmitted by a stockholder, or by a proxy holder or other person authorized to act for a stockholder, shall be deemed to be written, signed and dated for the purpose of this Section 1.11, provided that such electronic transmission sets forth or is delivered with information from which the corporation can determine (a) that the electronic transmission was transmitted by the stockholder or by a person authorized to act for the stockholder and (b) the date on which such stockholder or authorized person transmitted such electronic transmission. The date on which such electronic transmission is transmitted shall be deemed to be the date on which such consent was signed. No consent given by electronic transmission shall be deemed to have been delivered until such consent is reproduced in paper form and until such paper form shall be delivered to the corporation by delivery to its principal place of business or an officer or agent of the corporation having custody of the books in which proceedings of meetings of stockholders are recorded.

1.12 Meetings by Remote Communication. If authorized by the Board of Directors, and subject to such guidelines and procedures as the Board of Directors may adopt, stockholders and proxy holders not physically present at a meeting of stockholders may, by means of remote communication, participate in the meeting and be deemed present in person and vote at the meeting, whether such meeting is to be held at a designated place or solely by means of remote communication, provided that (a) the corporation shall implement reasonable measures to verify that each person deemed present and permitted to vote at the meeting by means of remote communication is a stockholder or proxy holder, (b) the corporation shall implement reasonable measures to provide such stockholders and proxy holders a reasonable opportunity to participate in the meeting and to vote on matters submitted to the stockholders, including an opportunity to read or hear the proceedings of the meeting substantially concurrently with such proceedings, and (c) if any stockholder or proxy holder votes or takes other action at the meeting by means of remote communication, a record of such vote or other action shall be maintained by the corporation.

ARTICLE II
BOARD OF DIRECTORS

2.1 General Powers. The business and affairs of the corporation shall be managed by or under the direction of a Board of Directors, who may exercise all of the powers of the corporation except as otherwise provided by law or the Certificate of Incorporation. In the event of a vacancy on the Board of Directors, the remaining directors, except as otherwise provided by law or the Certificate of Incorporation, may exercise the powers of the full Board of Directors until the vacancy is filled.

2.2 Number and Term of Office. Subject to the terms of the Certificate of Incorporation, including the rights of the holders of any series of Preferred Stock to elect directors under specified circumstances, the number of directors shall initially be two (2) and, thereafter, shall be fixed from time to time exclusively by the Board of Directors pursuant to a resolution adopted by a majority of the total number of authorized directors (whether or not there exist any vacancies in previously authorized directorships at the time any such resolution is presented to the Board of Directors for adoption). Except as otherwise provided by the Certificate of Incorporation, all directors shall hold office until the next annual meeting of stockholders and until their respective successors are elected, except in the case of the death, resignation or removal of any director.

2.3 Vacancies and Newly Created Directorships. Subject to the rights of the holders of any series of Preferred Stock then outstanding, newly created directorships resulting from any increase in the authorized number of directors or any vacancies in the Board of Directors resulting from death, resignation, retirement, disqualification or other cause (other than removal from office by a vote of the stockholders) may be filled only by a majority vote of the directors then in office, though less than a quorum, or by the sole remaining director, and directors so chosen shall hold office for a term expiring at the next annual meeting of stockholders. No decrease in the number of directors constituting the Board of Directors shall shorten the term of any incumbent director.

2.4 Resignation. Any director may resign by delivering notice in writing or by electronic transmission to the Chief Executive Officer, the President, the Chairman of the Board or the Secretary. Such resignation shall be effective upon receipt unless it is specified to be effective at some other time or upon the happening of some other event.

2.5 Removal. Subject to the rights of the holders of any series of Preferred Stock then outstanding, any directors, or the entire Board of Directors, may be removed from office at any time, with or without cause, by the affirmative vote of the holders of a majority of the voting power of all of the outstanding shares of capital stock entitled to vote generally in the election of directors, voting together as a single class, and any vacancies in the Board of Directors resulting from such removal may be filled by a majority of the directors then in office, though less than a quorum, by the sole remaining director, or by the stockholders at the next annual meeting or at a special meeting called in accordance with Section 1.3 above. Directors so chosen shall hold office until the next annual meeting of stockholders.

2.6 Regular Meetings. Regular meetings of the Board of Directors may be held without notice at such time and place, either within or without the State of Delaware, as shall be determined from time to time by the Board of Directors; provided that any director who is absent when such a determination is made shall be given notice of the determination. A regular meeting of the Board of Directors may be held without notice immediately after and at the same place as the annual meeting of stockholders.

2.7 Special Meetings. Special meetings of the Board of Directors may be called by the Chairman of the Board, the Chief Executive Officer, the President or two or more directors and may be held at any time and place, within or without the State of Delaware.

2.8 Notice of Special Meetings. Notice of any special meeting of directors shall be given to each director by the Secretary or by the officer or one of the directors calling the meeting. Notice shall be duly given to each director by whom it is not waived by (a) giving notice to such director in person or by telephone, electronic transmission or voice message system at least 24 hours in advance of the meeting, (b) sending a facsimile to his last known facsimile number, or delivering written notice by hand to his last known business or home address, at least 24 hours in advance of the meeting, or (c) mailing written notice to his last known business or home address at least three days in advance of the meeting. A notice or waiver of notice of a meeting of the Board of Directors need not specify the purposes of the meeting. Unless otherwise indicated in the notice thereof, any and all business may be transacted at a special meeting.

2.9 Participation in Meetings by Telephone Conference Calls or Other Methods of Communication. Directors or any members of any committee designated by the Board of Directors may participate in a meeting of the Board of Directors or such committee by means of conference telephone or other communications equipment by means of which all persons participating in the meeting can hear each other, and participation by such means shall constitute presence in person at such meeting.

2.10 Quorum. A majority of the total number of authorized directors shall constitute a quorum at any meeting of the Board of Directors. In the absence of a quorum at any such meeting, a majority of the directors present may adjourn the meeting from time to time without further notice other than announcement at the meeting, until a quorum shall be present. Interested directors may be counted in determining the presence of a quorum at a meeting of the Board of Directors or at a meeting of a committee.

2.11 Action at Meeting. At any meeting of the Board of Directors at which a quorum is present, the vote of a majority of those present shall be sufficient to take any action, unless a different vote is specified by law, the Certificate of Incorporation or these Bylaws.

2.12 Action by Written Consent. Any action required or permitted to be taken at any meeting of the Board of Directors or of any committee of the Board of Directors may be taken without a meeting if all members of the Board of Directors or committee, as the case may be, consent to the action in writing or by electronic transmission, and the writings or electronic transmissions are filed with the minutes of proceedings of the Board of Directors or committee.

Such filing shall be in paper form if the minutes are maintained in paper form and shall be in electronic form if the minutes are maintained in electronic form.

2.13 Committees. The Board of Directors may designate one or more committees, each committee to consist of one or more of the directors of the corporation, with such lawfully delegated powers and duties as it therefor confers, to serve at the pleasure of the Board of Directors. The Board of Directors may designate one or more directors as alternate members of any committee, who may replace any absent or disqualified member at any meeting of the committee. In the absence or disqualification of a member of a committee, the member or members of the committee present at any meeting and not disqualified from voting, whether or not he or they constitute a quorum, may unanimously appoint another member of the Board of Directors to act at the meeting in the place of any such absent or disqualified member. Any such committee, to the extent provided in the resolution of the Board of Directors and subject to the provisions of the Delaware General Corporation Law, shall have and may exercise all the powers and authority of the Board of Directors in the management of the business and affairs of the corporation and may authorize the seal of the corporation to be affixed to all papers which may require it. Each such committee shall keep minutes and make such reports as the Board of Directors may from time to time request. Except as the Board of Directors may otherwise determine, any committee may make rules for the conduct of its business, but unless otherwise provided by such rules, its business shall be conducted as nearly as possible in the same manner as is provided in these Bylaws for the Board of Directors.

2.14 Compensation of Directors. Directors may be paid such compensation for their services and such reimbursement for expenses of attendance at meetings as the Board of Directors may from time to time determine. No such payment shall preclude any director from serving the corporation or any of its parent or subsidiary entities in any other capacity and receiving compensation for such service.

2.15 Nomination of Director Candidates. Subject to the rights of holders of any class or series of Preferred Stock then outstanding, nominations for the election of directors may be made by (a) the Board of Directors or a duly authorized committee thereof or (b) any stockholder entitled to vote in the election of directors.

ARTICLE III
OFFICERS

3.1 Enumeration. The officers of the corporation shall consist of (a) a Chairman of the Board, a Chief Executive Officer and/or a President, (b) a Secretary, (c) a Treasurer and/or a Chief Financial Officer and (d) such other officers with such other titles as the Board of Directors shall determine, including, at the discretion of the Board of Directors, one or more Vice Presidents and Assistant Secretaries and Assistant Treasurers. The Board of Directors may appoint such other officers as it may deem appropriate.

3.2 Election. Officers shall be elected annually by the Board of Directors at its first meeting following the annual meeting of stockholders. Officers may be appointed by the Board of Directors at any other meeting.

3.3 Qualification. No officer need be a stockholder of the corporation. Any two or more offices may be held by the same person.

3.4 Tenure. Except as otherwise provided by law, by the Certificate of Incorporation or by these Bylaws, each officer shall hold office until his successor is elected and qualified, unless a different term is specified in the vote appointing the officer, or until his earlier death, resignation or removal.

3.5 Resignation and Removal. Any officer may resign by delivering his written resignation to the corporation at its principal office or to the Chairman of the Board, the President or Secretary. Such resignation shall be effective upon receipt unless it is specified to be effective at some other time or upon the happening of some other event. Any officer elected by the Board of Directors may be removed at any time, with or without cause, by the Board of Directors.

3.6 Chairman of the Board. The Board of Directors may appoint a Chairman of the Board. If the Board of Directors appoints a Chairman of the Board, he shall perform such duties and possess such powers as are assigned to the Chairman by the Board of Directors. Unless otherwise provided by the Board of Directors, he shall preside at all meetings of the Board of Directors. If there is no Chief Executive Officer or President, the Chairman of the Board shall have the general powers and duties of management usually vested in the chief executive officer of a corporation.

3.7 Chief Executive Officer. The Chief Executive Officer of the corporation, if any, shall, subject to the direction of the Board of Directors, have general supervision, direction and control of the business and the officers of the corporation. He shall preside at all meetings of the stockholders and, in the absence or nonexistence of a Chairman of the Board, at all meetings of the Board of Directors. He shall have the general powers and duties of management usually vested in the chief executive officer of a corporation, including general supervision, direction and control of the business and supervision of other officers of the corporation, and shall have such other powers and duties as may be prescribed by the Board of Directors or these Bylaws.

3.8 President. Subject to the direction of the Board of Directors and such supervisory powers as may be given by these Bylaws or the Board of Directors to the Chairman of the Board or the Chief Executive Officer, if such titles be held by other officers, the President, if any, shall have general supervision, direction and control of the business and supervision of other officers of the corporation. Unless otherwise designated by the Board of Directors, the President shall be the Chief Executive Officer of the corporation. The President shall have such other powers and duties as may be prescribed by the Board of Directors or these Bylaws. He shall have power to sign stock certificates, contracts and other instruments of the corporation which are authorized and shall have general supervision and direction of all of the other officers, employees and agents of the corporation, other than the Chairman of the Board and the Chief Executive Officer.

3.9 Vice Presidents. Any Vice President shall perform such duties and possess such powers as the Board of Directors, the Chief Executive Officer or the President may from time to time prescribe. In the event of the absence, inability or refusal to act of the President, the Vice President (or if there shall be more than one, the Vice Presidents in the order determined by the

Board of Directors) shall perform the duties of the President and when so performing shall have all the powers of and be subject to all the restrictions upon the President. The Board of Directors may assign to any Vice President the title of Executive Vice President, Senior Vice President or any other title selected by the Board of Directors.

3.10 Secretary and Assistant Secretaries. The Secretary shall perform such duties and shall have such powers as the Board of Directors or the President may from time to time prescribe. In addition, the Secretary shall perform such duties and have such powers as are set forth in these Bylaws and as are incident to the office of the Secretary, including, without limitation, the duty and power to give notices of all meetings of stockholders and special meetings of the Board of Directors, to keep a record of the proceedings of all meetings of stockholders and the Board of Directors, to maintain a stock ledger and prepare lists of stockholders and their addresses as required, to be custodian of corporate records and the corporate seal and to affix and attest to the same on documents.

Any Assistant Secretary shall perform such duties and possess such powers as the Board of Directors, the Chief Executive Officer, the President or the Secretary may from time to time prescribe. In the event of the absence, inability or refusal to act of the Secretary, the Assistant Secretary (or if there shall be more than one, the Assistant Secretaries in the order determined by the Board of Directors) shall perform the duties and exercise the powers of the Secretary.

In the absence of the Secretary or any Assistant Secretary at any meeting of stockholders or directors, the person presiding at the meeting shall designate a temporary secretary to keep a record of the meeting.

3.11 Treasurer. The Treasurer shall perform such duties and have such powers as are incident to the office of treasurer, including without limitation, the duty and power to keep and be responsible for all funds and securities of the corporation, to maintain the financial records of the corporation, to deposit funds of the corporation in depositories as authorized, to disburse such funds as authorized, to make proper accounts of such funds, and to render as required by the Board of Directors accounts of all such transactions and of the financial condition of the corporation.

3.12 Chief Financial Officer. The Chief Financial Officer shall perform such duties and shall have such powers as may from time to time be assigned to the Chief Financial Officer by the Board of Directors, the Chief Executive Officer or the President. Unless otherwise designated by the Board of Directors, the Chief Financial Officer shall be the Treasurer of the corporation.

3.13 Salaries. Officers of the corporation shall be entitled to such salaries, compensation or reimbursement as shall be fixed or allowed from time to time by the Board of Directors.

3.14 Delegation of Authority. The Board of Directors may from time to time delegate the powers or duties of any officer to any other officers or agents, notwithstanding any provision hereof.

ARTICLE IV
CAPITAL STOCK

4.1 Issuance of Stock. Subject to the provisions of the Certificate of Incorporation, the whole or any part of any unissued balance of the authorized capital stock of the corporation or the whole or any part of any unissued balance of the authorized capital stock of the corporation held in its treasury may be issued, sold, transferred or otherwise disposed of by vote of the Board of Directors in such manner, for such consideration and on such terms as the Board of Directors may determine.

4.2 Certificates of Stock. Every holder of stock of the corporation shall be entitled to have a certificate, in such form as may be prescribed by law and by the Board of Directors, certifying the number and class of shares of stock owned by such stockholder in the corporation. Each such certificate shall be signed by, or in the name of the corporation by, the Chairman or Vice Chairman, if any, of the Board of Directors, or the President or a Vice President, and the Treasurer or an Assistant Treasurer, or the Secretary or an Assistant Secretary of the corporation. Any or all of the signatures on the certificate may be a facsimile.

Each certificate for shares of stock which are subject to any restriction on transfer pursuant to the Certificate of Incorporation, these Bylaws, applicable securities laws or any agreement among any number of stockholders or among such holders and the corporation, shall have conspicuously noted on the face or back of the certificate either the full text of the restriction or a statement of the existence of such restriction.

4.3 Transfers. Except as otherwise established by rules and regulations adopted by the Board of Directors, and subject to applicable law and the Certificate of Incorporation, shares of stock may be transferred on the books of the corporation by the surrender to the corporation or its transfer agent of the certificate representing such shares properly endorsed or accompanied by a written assignment or power of attorney properly executed, and with such proof of authority or authenticity of signature as the corporation or its transfer agent may reasonably require. Except as may be otherwise required by law, the Certificate of Incorporation or these Bylaws, the corporation shall be entitled to treat the record holder of stock as shown on its books as the owner of such stock for all purposes, including the payment of dividends and the right to vote with respect to such stock, regardless of any transfer, pledge or other disposition of such stock until the shares have been transferred on the books of the corporation in accordance with the requirements of these Bylaws.

4.4 Lost, Stolen or Destroyed Certificates. The corporation may issue a new certificate of stock in place of any previously issued certificate alleged to have been lost, stolen, or destroyed, upon such terms and conditions as the Board of Directors may prescribe, including the presentation of reasonable evidence of such loss, theft or destruction and the giving of such indemnity as the Board of Directors may require for the protection of the corporation or any transfer agent or registrar.

4.5 Record Date. The Board of Directors may fix in advance a record date for the determination of the stockholders entitled to notice of or to vote at any meeting of stockholders

or to express consent to corporate action in writing without a meeting, or entitled to receive payment of any dividend or other distribution or allotment of any rights in respect of any change, concession or exchange of stock, or for the purpose of any other lawful action. Such record date shall not precede the date on which the resolution fixing the record date is adopted and shall not be more than 60 nor less than 10 days before the date of such meeting, nor more than 60 days prior to any other action to which such record date relates.

If no record date is fixed by the Board of Directors, the record date for determining the stockholders entitled to notice of or to vote at a meeting of stockholders shall be the close of business on the day before the day on which notice is given, or, if notice is waived, the close of business on the day before the day on which the meeting is held. If no record date is fixed by the Board of Directors, the record date for determining stockholders entitled to express consent to corporate action in writing without a meeting when no prior action by the Board of Directors is necessary, shall be the day on which the first written consent is expressed. The record date for determining stockholders for any other purpose shall be at the close of business on the day on which the Board of Directors adopts the resolution relating to such purpose.

A determination of stockholders of record entitled to notice of or to vote at a meeting of stockholders shall apply to any adjournment of the meeting; provided, however, that the Board of Directors may fix a new record date for the adjourned meeting.

ARTICLE V
GENERAL PROVISIONS

5.1 Fiscal Year. The fiscal year of the corporation shall be as fixed by the Board of Directors.

5.2 Corporate Seal. The corporate seal shall be in such form as shall be approved by the Board of Directors.

5.3 Waiver of Notice. Whenever any notice whatsoever is required to be given by law, by the Certificate of Incorporation or by these Bylaws, a waiver of such notice either in writing signed by the person entitled to such notice or such person's duly authorized attorney, or by electronic transmission or any other method permitted under the Delaware General Corporation Law, whether before, at or after the time stated in such waiver, or the appearance of such person or persons at such meeting in person or by proxy, shall be deemed equivalent to such notice. Neither the business nor the purpose of any meeting need be specified in such a waiver. Attendance at any meeting shall constitute waiver of notice except attendance for the sole purpose of objecting to the timeliness or manner of notice.

5.4 Actions with Respect to Securities of Other Corporations. Except as the Board of Directors may otherwise designate, the Chairman of the Board, the Chief Executive Officer or the President or any officer of the corporation authorized by the Chairman of the Board, the Chief Executive Officer or the President shall have the power to vote and otherwise act on behalf of the corporation, in person or by proxy, and may waive notice of, and act as, or appoint any person or persons to act as, proxy or attorney-in-fact to the corporation (with or without power of

substitution) at any meeting of stockholders or shareholders (or with respect to any action of stockholders) of any other corporation or organization, the securities of which may be held by the corporation and otherwise to exercise any and all rights and powers that the corporation may possess by reason of the corporation's ownership of securities in such other corporation or other organization.

5.5 Evidence of Authority. A certificate executed by the Secretary, or an Assistant Secretary, or a temporary Secretary, as to any action taken by the stockholders, directors, a committee or any officer or representative of the corporation shall as to all persons who rely on the certificate in good faith be conclusive evidence of such action.

5.6 Certificate of Incorporation. All references in these Bylaws to the Certificate of Incorporation shall be deemed to refer to the Certificate of Incorporation of the corporation, as amended and in effect from time to time.

5.7 Severability. Any determination that any provision of these Bylaws is for any reason inapplicable, illegal or ineffective shall not affect or invalidate any other provision of these Bylaws.

5.8 Pronouns. All pronouns used in these Bylaws shall be deemed to refer to the masculine, feminine or neuter, singular or plural, as the identity of the person or persons may require.

5.9 Notices. Except as otherwise specifically provided herein or required by law, all notices required to be given to any stockholder, director, officer, employee or agent of the corporation hereunder shall be in writing and may in every instance be effectively given by hand delivery to the recipient thereof, by depositing such notice in the mails, postage paid, or by sending such notice by commercial courier service, or by facsimile or other electronic transmission, provided that notice to stockholders by electronic transmission shall be given in the manner provided in Section 232 of the Delaware General Corporation Law. Any such notice shall be addressed to such stockholder, director, officer, employee or agent at his last known address as the same appears on the books of the corporation. The time when such notice shall be deemed to be given shall be the time such notice is received by such stockholder, director, officer, employee or agent, or by any person accepting such notice on behalf of such person, if delivered by hand, facsimile, other electronic transmission or commercial courier service, or the time such notice is dispatched, if delivered through the mails. Without limiting the manner by which notice otherwise may be given effectively, notice to any stockholder shall be deemed given: (a) if by facsimile, when directed to a number at which the stockholder has consented to receive notice; (b) if by electronic mail, when directed to an electronic mail address at which the stockholder has consented to receive notice; (c) if by a posting on an electronic network together with separate notice to the stockholder of such specific posting, upon the later of (i) such posting and (ii) the giving of such separate notice; (d) if by any other form of electronic transmission, when directed to the stockholder; and (e) if by mail, when deposited in the mail, postage prepaid, directed to the stockholder at such stockholder's address as it appears on the records of the corporation.

5.10 Reliance Upon Books, Reports and Records. Each director, each member of any committee designated by the Board of Directors, and each officer of the corporation shall, in the performance of his duties, be fully protected in relying in good faith upon the books of account or other records of the corporation, including reports made to the corporation by any of its officers, by an independent certified public accountant, or by an appraiser selected with reasonable care.

5.11 Time Periods. In applying any provision of these Bylaws which require that an act be done or not done a specified number of days prior to an event or that an act be done during a period of a specified number of days prior to an event, calendar days shall be used, the day of the doing of the act shall be excluded, and the day of the event shall be included.

5.12 Facsimile Signatures. In addition to the provisions for use of facsimile signatures elsewhere specifically authorized in these Bylaws, facsimile signatures of any officer or officers of the corporation may be used whenever and as authorized by the Board of Directors or a committee thereof.

5.13 Annual Report. For so long as the corporation has fewer than 100 holders of record of its shares, the mandatory requirement of an annual report under Section 1501 of the California Corporations Code, if applicable, is hereby expressly waived.

ARTICLE VI
AMENDMENTS

6.1 By the Board of Directors. Except as is otherwise set forth in the Certificate of Incorporation or these Bylaws, these Bylaws may be altered, amended or repealed or new Bylaws may be adopted by the affirmative vote of a majority of the directors present at any regular or special meeting of the Board of Directors at which a quorum is present.

6.2 By the Stockholders. Except as otherwise set forth in the Certificate of Incorporation or these Bylaws, these Bylaws may be altered, amended or repealed or new Bylaws may be adopted by the affirmative vote of the holders of at least a majority of the voting power of all of the shares of capital stock of the corporation issued and outstanding and entitled to vote generally in any election of directors, voting together as a single class. Such vote may be held at any annual meeting of stockholders, or at any special meeting of stockholders provided that notice of such alteration, amendment, repeal or adoption of new Bylaws shall have been stated in the notice of such special meeting.

ARTICLE VII
INDEMNIFICATION OF DIRECTORS AND OFFICERS

7.1 Right to Indemnification. Each person who was or is made a party or is threatened to be made a party to or is involved in any action, suit or proceeding, whether civil, criminal, administrative or investigative (“proceeding”), by reason of the fact that he or a person

of whom he is the legal representative, is or was a director or officer of the corporation or is or was serving at the request of the corporation as a director or officer of another corporation, or as a controlling person of a partnership, joint venture, trust or other enterprise, including service with respect to employee benefit plans, whether the basis of such proceeding is alleged action in an official capacity as a director or officer, or in any other capacity while serving as a director or officer, shall be indemnified and held harmless by the corporation to the fullest extent authorized by the Delaware General Corporation Law, as the same exists or may hereafter be amended (but, in the case of any such amendment, only to the extent that such amendment permits the corporation to provide broader indemnification rights than such law permitted the corporation to provide prior to such amendment) against all expenses, liability and loss reasonably incurred or suffered by such person in connection therewith and such indemnification shall continue as to a person who has ceased to be a director or officer and shall inure to the benefit of his heirs, executors and administrators; provided, however, that except as provided in Section 7.2 of this Article VII, the corporation shall indemnify any such person seeking indemnity in connection with a proceeding (or part thereof) initiated by such person only if (a) such indemnification is expressly required to be made by law, (b) the proceeding (or part thereof) was authorized by the Board of Directors, (c) such indemnification is provided by the corporation, in its sole discretion, pursuant to the powers vested in the corporation under the Delaware General Corporation Law, or (d) the proceeding (or part thereof) is brought to establish or enforce a right to indemnification or advancement under an indemnity agreement or any other statute or law or otherwise as required under Section 145 of the Delaware General Corporation Law. The rights hereunder shall be contract rights and shall include the right to be paid expenses incurred in defending any such proceeding in advance of its final disposition; provided, however, that the payment of such expenses incurred by a director or officer of the corporation in his capacity as a director or officer (and not in any other capacity in which service was or is tendered by such person while a director or officer, including, without limitation, service to an employee benefit plan) in advance of the final disposition of such proceeding, shall be made only upon delivery to the corporation of an undertaking, by or on behalf of such director or officer, to repay all amounts so advanced if it should be determined ultimately by final judicial decision from which there is no further right to appeal that such director or officer is not entitled to be indemnified under this section or otherwise.

7.2 Right of Claimant to Bring Suit. If a claim under Section 7.1 is not paid in full by the corporation within 60 days after a written claim has been received by the corporation, or 20 days in the case of a claim for advancement of expenses, the claimant may at any time thereafter bring suit against the corporation to recover the unpaid amount of the claim and, if such suit is not frivolous or brought in bad faith, the claimant shall be entitled to be paid also the expense of prosecuting such claim. It shall be a defense to any such action (other than an action brought to enforce a claim for expenses incurred in defending any proceeding in advance of its final disposition where the required undertaking, if any, has been tendered to the corporation) that the claimant has not met the standards of conduct which make it permissible under the Delaware General Corporation Law for the corporation to indemnify the claimant for the amount claimed. Neither the failure of the corporation (including its Board of Directors, independent legal counsel, or its stockholders) to have made a determination prior to the commencement of such action that indemnification of the claimant is proper in the circumstances because he has met the applicable standard of conduct set forth in the Delaware General Corporation Law, nor an actual determination by the corporation (including its Board of Directors, independent legal counsel or

its stockholders) that the claimant has not met such applicable standard of conduct, shall be a defense to the action or create a presumption that claimant has not met the applicable standard of conduct. In any suit brought by the corporation to recover an advancement of expenses pursuant to the terms of an undertaking, the corporation shall be entitled to recover such expenses upon a final judicial decision from which there is no further right to appeal that the indemnitee has not met the applicable standard for indemnification set forth in the Delaware General Corporation Law. In any suit brought by the indemnitee to enforce a right to indemnification or to an advancement of expenses hereunder, or brought by the corporation to recover an advancement of expenses pursuant to the terms of an undertaking, the burden of proving that the indemnitee is not entitled to be indemnified, or to such advancement of expenses, shall be on the corporation.

7.3 Indemnification of Employees and Agents. The corporation may, to the extent authorized from time to time by the Board of Directors, grant rights to indemnification, and to the advancement of related expenses, to any employee or agent of the corporation to the fullest extent of the provisions of this Article VII with respect to the indemnification of and advancement of expenses to directors and officers of the corporation.

7.4 Non-Exclusivity of Rights. The rights conferred on any person in this Article VII shall not be exclusive of any other right which such persons may have or hereafter acquire under any statute, provision of the Certificate of Incorporation, these Bylaw, agreement with the corporation, vote of stockholders or disinterested directors or otherwise.

7.5 Indemnification Contracts. The Board of Directors is authorized to enter into a contract with any director, officer, employee or agent of the corporation, or any person serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, including employee benefit plans, providing for indemnification rights equivalent to or, if the Board of Directors so determines, greater than, those provided for in this Article VII.

7.6 Insurance. The corporation may maintain insurance to the extent reasonably available, at its expense, to protect itself and any such director, officer, employee or agent of the corporation or another corporation, partnership, joint venture, trust or other enterprise against any such expense, liability or loss, whether or not the corporation would have the power to indemnify such person against such expense, liability or loss under the Delaware General Corporation Law.

7.7 Effect of Amendment. Any amendment, repeal or modification of any provision of this Article VII shall not adversely affect any right or protection of an indemnitee or his successor in respect of any act or omission occurring prior to such amendment, repeal or modification.

CERTIFICATE OF ADOPTION OF BYLAWS

OF

ASCENDANT MDX, INC.

CERTIFICATE BY SECRETARY OF ADOPTION

The undersigned hereby certifies that he is the duly elected and acting Secretary of Ascendant MDx, Inc., a Delaware corporation (the "Corporation"), and that the foregoing Bylaws were adopted as the Bylaws of the Corporation on July 25, 2013 by the Board of Directors of the Corporation.

Executed this 25th day of July, 2013.

/s/ Eric Fox
Eric Fox, Secretary

Exhibit 4.2

Execution Version

THIS WARRANT AND THE SECURITIES REPRESENTED BY THIS WARRANT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT, OR ANY STATE SECURITIES OR BLUE SKY LAWS. NO SALE, DISTRIBUTION OR OTHER TRANSFER MAY BE EFFECTED WITHOUT AN EFFECTIVE REGISTRATION STATEMENT RELATED THERETO OR, IF REQUESTED BY THE COMPANY, AN OPINION OF COUNSEL IN A FORM SATISFACTORY TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED UNDER THE SECURITIES ACT OR ANY SUCH STATE SECURITIES OR BLUE SKY LAWS.

Warrant No. 1
Date of Issuance: October 27, 2017

Number of Shares: 1,416,431
(subject to adjustment)

PROGENITY, INC.

Series B Preferred Stock Purchase Warrant

Progenity, Inc., a Delaware corporation (the "**Company**"), for value received, hereby certifies that ATHYRIUM OPPORTUNITIES III CO-INVEST 1 LP, or its registered assigns (the "**Registered Holder**"), is entitled, subject to the terms set forth below, to purchase from the Company, at any time after the date hereof and on or before the Expiration Date (as defined below), up to 1,416,431 shares of Series B Preferred Stock, par value $0.001, of the Company (the "**Series B Preferred Stock**"), at an initial purchase price of $3.53 per share (the "**Initial Purchase Price**"). The shares issuable upon exercise of this Warrant and the exercise price per share, as adjusted from time to time pursuant to the provisions of this Warrant, are sometimes hereinafter referred to as the "**Warrant Stock**" and the "**Exercise Price**," respectively. This Series B Preferred Stock Purchase Warrant (this "**Warrant**") is issued under and pursuant to that certain Credit and Security Agreement, dated as of the Issuance Date, by and among the Company, as borrower, the lenders party thereto, and Athyrium Opportunities III Co-Invest 1 LP, as collateral agent (as amended, modified, restated, refinanced, replaced or supplemented from time to time, the "**Credit Agreement**").

1. **Exercise.**

(a) **Payment.** This Warrant may be exercised by the Registered Holder, in whole or in part, by (i) surrendering this Warrant, with the purchase/exercise form appended hereto as Exhibit A (the "**Notice of Exercise**") duly executed by such Registered Holder or by such Registered Holder's duly authorized representative, at the principal office of the Company, or at such other office or agency as the Company may designate from time to time (the "**Registrar's Office**"), and (ii) making payment in full of the aggregate Exercise Price payable in respect of the number of shares of Warrant Stock set forth in the Notice of Exercise by wire transfer of immediately available funds to the account designated by the Company from time to time.

(b) **Net Issue Exercise.** In lieu of exercising this Warrant in the manner provided in Section 1(a), the Registered Holder may exercise this Warrant, in whole or in part, by electing a net issue exercise for this Warrant (or the portion thereof being exercised) by surrendering this Warrant at the Registrar's Office, together with the Notice of Exercise duly executed by the

Registered Holder or such Registered Holder's duly authorized representative, electing the "Net Issue Exercise" in the Notice of Exercise, in which event the Company shall issue to the Registered Holder a number of shares of Warrant Stock computed using the following formula:

$$X = \frac{Y (A - B)}{A}$$

Where X = The number of shares of Warrant Stock to be issued to the Registered Holder.

Y = The number of shares of Warrant Stock purchasable under this Warrant or, if only a portion of the Warrant is being exercised, the portion of the Warrant being cancelled (at the date of such calculation).

A = The Fair Market Value of one share of Warrant Stock (as adjusted to the date of such calculation).

B = The Exercise Price (as adjusted to the date of such calculation).

All references herein to an "exercise" of the Warrant in this Warrant, shall include, as the context requires, an exercise pursuant to this Section 1(b).

(c) **Effective Time of Exercise.** Each exercise of this Warrant shall be deemed to have been effected immediately prior to the close of business on the day on which this Warrant shall have been surrendered to the Company and the other delivery requirements of the Registered Holder have been completed as set forth in Sections 1(a) and 1(b) above. At such time, the Person or Persons in whose name or names any certificates for Warrant Stock shall be issuable upon such exercise as provided in Section 1(d) below shall be deemed to have become the holder or holders of record of the Warrant Stock to be represented by such certificates.

(d) **Delivery to Registered Holder.** As soon as practicable after the exercise of this Warrant in whole or in part, and in any event within ten Business Days thereafter, the Company at its expense will cause to be issued in the name of, and delivered to, the Registered Holder, or as such Registered Holder (upon payment by such Registered Holder of any applicable transfer taxes) may direct:

(i) a certificate or certificates for the number of shares of Warrant Stock to which such Registered Holder shall be entitled, and

(ii) in case such exercise is in part only, a new warrant or warrants (dated the Issuance Date) of like tenor, calling in the aggregate on the face or faces thereof for the number of shares of Warrant Stock equal (without giving effect to any adjustment thereof) to the number of such shares called for on the face of this Warrant minus the number of such shares cancelled upon exercise of this Warrant as provided in this Section 1 (without giving effect to any adjustment thereof) and otherwise on terms identical to this Warrant.

(e) **Warrant Stock; Exercise Price**.

(i) **Warrant Stock**. This Warrant shall be exercisable for shares of Series B Preferred Stock, provided that in the event of (A) consummation of a Qualified IPO, this Warrant shall thereafter become exercisable for the number of shares of Common Stock equal to the number of shares of Common Stock that would be issuable upon conversion of the shares of Series B Preferred Stock subject to purchase pursuant to this Warrant as of the date of consummation of such Qualified IPO; and (B) any reclassification or change described in Section 2(b), this Warrant shall thereafter be exercisable for the stock or other securities or property as set forth therein.

(ii) **Exercise Price**. The Exercise Price shall initially be the Initial Purchase Price per share and may be adjusted pursuant to Section 2; provided that in the event of a Qualified IPO, the exercise price for each share of Common Stock issuable upon exercise of this Warrant under Section 1(e)(i)(A), shall be the lesser of (A) (x) the Exercise Price divided by (y) the number of shares of Common Stock that would be issuable upon conversion of each share of Series B Preferred Stock as of the date of consummation of such Qualified IPO; and (B) the "Price to Public" per share of Common Stock specified in the final prospectus with respect to such Qualified IPO.

2. **Adjustments.**

(a) **Stock Splits and Dividends.** If outstanding shares of the Warrant Stock shall be subdivided into a greater number of shares or a dividend in Warrant Stock shall be paid in respect of the Warrant Stock, the Exercise Price in effect immediately prior to such subdivision or at the record date of such dividend shall simultaneously with the effectiveness of such subdivision or immediately after the record date of such dividend be proportionately reduced. If outstanding shares of Warrant Stock shall be combined into a smaller number of shares, the Exercise Price in effect immediately prior to such combination shall, simultaneously with the effectiveness of such combination, be proportionately increased. When any adjustment is required to be made in the Exercise Price under this Section 2(a), the number of shares of Warrant Stock purchasable upon the exercise of this Warrant shall be changed to the number determined by dividing (i) an amount equal to the number of shares issuable upon the exercise of this Warrant immediately prior to such adjustment, multiplied by the Exercise Price in effect immediately prior to such adjustment, by (ii) the Exercise Price in effect immediately after such adjustment.

(b) **Reclassification, Etc.** In case of any reclassification or change in the outstanding shares of Warrant Stock or any similar corporate reorganization on or after the date hereof, then, in each such case the holder of this Warrant, upon the exercise hereof at any time after the consummation of such reclassification or change, shall be entitled to receive, in lieu of the Warrant Stock receivable upon the exercise hereof prior to such consummation, the stock or other securities or property to which such holder would have been entitled upon such consummation if such holder had exercised this Warrant immediately prior thereto, all subject to further adjustment as provided in Section 2(a); and in each such case, the terms of this Section 2(b) shall be applicable to the shares of stock or other securities properly receivable upon the exercise of this Warrant after such consummation.

(c) **Diluting Issuances**. The parties hereto acknowledge that in the event of a dilutive issuance as described in Article IV(B)(4)(d)(i) of the Certificate (such provision, the "**Provision**") by the Company after the Issuance Date, without any action by the Company or the Registered Holder hereunder, the number of shares of Common Stock issuable upon conversion of the Series B Preferred Stock (including the Series B Preferred Stock issuable upon the exercise of this Warrant as set forth herein) shall be adjusted in accordance with the Provision. Under no circumstances shall the number of shares of Warrant Stock issuable or the Exercise Price payable by the Registered Holder upon exercise of the Warrant increase or decrease as a result of any adjustment arising under the Provision.

(d) **Adjustment Certificate.** When any adjustment is required to be made in the Warrant Stock or the Exercise Price pursuant to Section 2(a) or (b), the Company shall promptly mail to the Registered Holder a certificate setting forth (i) a brief statement of the facts requiring such adjustment, (ii) the Exercise Price after such adjustment and (iii) the kind and amount of stock or other securities or property into which this Warrant shall be exercisable after such adjustment.

3. **Transfers.**

(a) **Unregistered Security.** Each holder of this Warrant acknowledges that the issuance and sale of this Warrant and the Warrant Stock have not been registered under the Securities Act, and agrees not to sell, pledge, distribute, offer for sale, transfer or otherwise dispose of this Warrant or any Warrant Stock issued upon its exercise in the absence of (i) an effective registration statement under the Securities Act as to this Warrant or such Warrant Stock and registration or qualification of this Warrant or such Warrant Stock under any applicable U.S. federal or state securities law then in effect or (ii) an exemption from such registration and qualification requirements, supported by an opinion of counsel reasonably acceptable to the Company, if requested by the Company. Each certificate or other instrument for Warrant Stock issued upon the exercise of this Warrant shall bear a legend substantially to the foregoing effect. Notwithstanding the foregoing, the Company shall not require the Registered Holder to provide an opinion of counsel in connection with such sale, transfer or disposition if the transfer, sale or disposition is to an Affiliate of the Registered Holder; provided, that (x) any such transferee is an "accredited investor" as defined in Regulation D promulgated under the Securities Act, (y) such transferee complies in all respects with the transfer procedures set forth in this Section 3, as applicable, and (z) the Registered Holder provides the Company with documentation reasonably acceptable to the Company evidencing such transferee's status as an Affiliate of the Registered Holder and its compliance with this Section 3 as may be reasonably requested.

(b) **Transferability.** Subject to the other terms hereof, the Registered Holder may freely transfer this Warrant and the Warrant Stock in whole or in part to any Person at any time and from time to time; provided that in no event shall this Warrant or any Warrant Stock be assigned to a competitor of the Company, as determined in good faith by the Board of Directors of the Company (the "**Board**"); and provided further that the Registered Holder shall not partially transfer its right to acquire Warrant Stock hereunder unless it transfers the right to acquire at least 150,000 shares of Warrant Stock (subject to adjustment as set forth in Section 2). In the event of such a permitted transfer, transfer of this Warrant shall be effective upon surrender of this Warrant with a properly executed assignment (in the form of Exhibit B hereto) at the Registrar's Office,

and the Company or its transfer agent will issue and deliver, at the Company's expense, a new Warrant or Warrants of like tenor and otherwise on identical terms with this Warrant, in the name of such Registered Holder or as such Registered Holder (upon payment by such Registered Holder of any applicable transfer taxes) may direct, calling in the aggregate on the face or faces thereof for the number of shares of Warrant Stock called for on the face or faces of the Warrant or Warrants so surrendered.

(c) **Warrant Register.** The Company will maintain a register containing the names and addresses of the Registered Holders of this Warrant, and will promptly update such register to reflect any transfers in compliance with the terms hereof. Until any transfer of this Warrant is made in the warrant register, the Company may treat the Registered Holder of this Warrant as the absolute owner hereof for all purposes; provided, however, that if this Warrant is properly assigned in blank, the Company may (but shall not be required to) treat the bearer hereof as the absolute owner hereof for all purposes, notwithstanding any notice to the contrary. Any Registered Holder may change such Registered Holder's address as shown on the warrant register by written notice to the Secretary of the Company requesting such change.

4. **No Impairment.** The Company will not, by amendment of the Certificate or through reorganization, consolidation, merger, dissolution, sale of assets or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times, in good faith, carry out all such terms. This provision shall not restrict the Company's right to amend the Certificate with the requisite stockholder consent.

5. **Market Stand-Off**. In the event of the consummation of an IPO, the Registered Holder agrees, if so requested by the Company and the representative of the underwriters of the Common Stock (or other securities) of the Company, that the Registered Holder shall not sell, transfer, make any short sale of, grant any option for the purchase of, or enter into any hedging or similar transaction with the same economic effect as a sale with respect to, this Warrant or any Warrant Stock held by such Registered Holder (other than those included in the registration) during the 210-day period following the effective date of the IPO; provided, however, that all officers and directors of the Company and holders of at least one percent (1%) of the Company's voting securities are bound and have entered into similar agreements.

6. **Representations and Warranties of the Registered Holder**. The Registered Holder hereby represents and warrants to the Company, that:

(a) **Authorization**. The Registered Holder has full power and authority to enter into this Warrant. The Warrant, when executed and delivered by the Registered Holder, will constitute a valid and legally binding obligation of the Registered Holder, enforceable in accordance with its terms, except as limited by applicable bankruptcy, insolvency, reorganization, moratorium, fraudulent conveyance, and any other laws of general application affecting enforcement of creditors' rights generally, and as limited by laws relating to the availability of specific performance, injunctive relief, or other equitable remedies.

(b) **Purchase Entirely for Own Account**. This Warrant is issued to the Registered Holder in reliance upon the Registered Holder's representation to the Company, which by the Registered Holder's acceptance of this Warrant, the Registered Holder hereby

confirms, that this Warrant and the Warrant Stock (collectively, the "**Securities**") are and will be acquired for investment purposes, for the Registered Holder's own account, not as a nominee or agent, and not with a view to the resale or distribution of any part thereof, and that the Registered Holder has no present intention of selling, granting any participation in, or otherwise distributing the same. By accepting this Warrant, the Registered Holder further represents that the Registered Holder does not presently have any contract, undertaking, agreement or arrangement with any Person to sell, transfer or grant participations to such Person or to any third Person, with respect to any of the Securities. The Registered Holder has not been formed for the specific purpose of acquiring the Securities.

(c) **Restricted Securities**. The Registered Holder understands that the Securities have not been, and will not be, registered under the Securities Act, by reason of a specific exemption from the registration provisions of the Securities Act which depends upon, among other things, the bona fide nature of the investment intent and the accuracy of the Registered Holder's representations as expressed herein. The Registered Holder understands that the Securities are "restricted securities" under applicable U.S. federal and state securities laws and that, pursuant to these laws, the Registered Holder must hold the Securities indefinitely unless they are registered with the Commission and qualified by state authorities, or an exemption from such registration and qualification requirements is available. The Registered Holder acknowledges that the Company has no obligation to register or qualify the Securities for resale. The Registered Holder further acknowledges that if an exemption from registration or qualification is available, it may be conditioned on various requirements including, but not limited to, the time and manner of sale, the holding period for the Securities, and on requirements relating to the Company which are outside of the Registered Holder's control, and which the Company is under no obligation and may not be able to satisfy.

(d) **No Public Market**. The Registered Holder understands that no public market now exists for any securities of the Company, and that the Company has made no assurances that a public market will ever exist for the Securities.

(e) **Accredited Investor; Not a Bad Actor**. The Registered Holder is an "accredited investor" within the meaning of Regulation D, Rule 501(a), promulgated by the Commission under the Securities Act, and shall submit to the Company such further assurances of such status as may be reasonably requested by the Company. Neither the Registered Holder nor any affiliate of the Registered Holder who could stand as beneficial owner of this Warrant or the Warrant Stock is subject to any of the "Bad Actor" disqualifications described in Securities Act Rule 506(d)(1) subsections (i) through (viii).

7. **Termination.** This Warrant shall be exercisable, in whole or in part, during the period commencing on the Issuance Date and ending on the seventh anniversary of the Issuance Date (the "**Final Expiration Date**"); provided that if, prior to the Final Expiration Date the Company consummates a Qualified IPO, this Warrant shall no longer be exercisable upon the later of (i) the closing and settlement of the Qualified IPO and (ii) the fifth anniversary of the Issuance Date (the Final Expiration Date, or such earlier termination date set forth in clauses (i) or (ii), the "**Expiration Date**"). This Warrant shall be no longer exercisable and shall become null and void at 5:00 p.m. Pacific Time on the Expiration Date.

8. **Notices of Certain Transactions.** In the event:

(a) that the Company shall set a record date for the holders of Warrant Stock for the purpose of entitling or enabling them to receive any dividend or other distribution, or to receive any right to subscribe for or purchase any shares of stock of any class or any other securities, or to receive any other right, or

(b) of any capital reorganization of the Company, any reclassification of the capital stock of the Company, or any transfer of all or substantially all of the assets of the Company, or

(c) a Sale Transaction, or

(d) of the voluntary or involuntary dissolution, liquidation or winding-up of the Company,

then, and in each such case, the Company will mail or cause to be mailed to the Registered Holder of this Warrant a notice specifying, as the case may be, (i) the record date for the purpose of such dividend, distribution or right, and stating the amount and character of such dividend, distribution or right, or (ii) the effective date on which such Sale Transaction, reorganization, reclassification, transfer, dissolution, liquidation or winding-up is to take place, and the time, if any is to be fixed, as of which the holders of record of shares of the Warrant Stock are to be determined. Such notice shall be mailed at least ten Business Days prior to the record date or effective date for the event specified in such notice.

9. **Treatment upon Sale Transaction**.

(a) In the event of a Sale Transaction (other than an Asset Sale) in which the consideration to be received by the Company's stockholders consists solely of cash, solely of Marketable Securities or a combination of cash and Marketable Securities (a "**Cash/Public Sale Transaction**") and if this Warrant is outstanding immediately prior to such Cash/Public Sale Transaction, then: (i) if the Fair Market Value per share of Warrant Stock is greater than the then applicable Exercise Price, this Warrant shall be automatically exchanged, without exercise, for (1) the same amount and kind of cash and/or Marketable Securities (including any contingent consideration) as it would have been entitled to receive upon the occurrence of such Cash/Public Sale Transaction if it had been, immediately prior to such Cash/Public Sale Transaction, a holder of the number of shares of Warrant Stock then issuable upon exercise in full of this Warrant (without regard to Section 18) minus (2) the applicable aggregate Exercise Price payable upon the exercise of this Warrant in full; and (ii) if the Fair Market Value per share of Warrant Stock is less than or equal to the then applicable Exercise Price, this Warrant shall be deemed to have expired immediately prior to the consummation of such Cash/Public Sale Transaction. In the event of a Cash/Public Sale Transaction as set forth in Section 9(a)(i), the Company shall pay or deliver to the Registered Holder the consideration contemplated in Section 9(a)(i) promptly following the consummation of the Cash/Public Sale Transaction.

(b) If, at any time while this Warrant is outstanding, the Company consummates a Sale Transaction (other than an Asset Sale) that is not a Cash/Public Sale Transaction, then the

Registered Holder shall have the right thereafter to receive, upon exercise of this Warrant, the same amount and kind of securities, cash or property (including contingent consideration) as it would have been entitled to receive upon the occurrence of such Sale Transaction if it had been, immediately prior to such Sale Transaction, a holder of the number of shares of Warrant Stock then issuable upon exercise in full of this Warrant (without regard to Section 18) (the "**Alternate Consideration**"). The Company shall not affect any such Sale Transaction in which the Company is not the surviving corporation, unless prior to or simultaneously with the consummation thereof, any successor to the Company shall assume (i) the obligation to deliver to the Registered Holder, such Alternate Consideration as, in accordance with the foregoing provisions, the Registered Holder may be entitled to acquire pursuant to the exercise of this Warrant, and (ii) the other obligations of the Company under this Warrant.

(c) In the event of a Sale Transaction as set forth in Article IV(B)(2)(f)(i)(1) of the Certificate (an "**Asset Sale**"), the Registered Holder shall be entitled to receive, without exercise of this Warrant, (1) the amount and kind of securities, cash or property (including contingent consideration), that the Registered Holder would have been entitled to receive upon any distributions by the Company to its stockholders of all or a portion of the proceeds received by the Company pursuant to such Asset Sale, as if it had been, immediately prior to such Asset Sale, a holder of the number of shares of Warrant Stock then issuable upon exercise in full of this Warrant (without regard to Section 18) minus (2) the applicable aggregate Exercise Price payable upon the exercise of this Warrant in full.

10. **Reservation of Stock.** The Company will at all times reserve and keep available, solely for the issuance and delivery upon the exercise of this Warrant, such shares of Warrant Stock and other stock, securities and property, as from time to time shall be issuable upon the exercise of this Warrant and the conversion of the Warrant Stock.

11. **Replacement of Warrants.** Upon receipt of evidence reasonably satisfactory to the Company of the loss, theft, destruction or mutilation of this Warrant and (in the case of loss, theft or destruction) upon delivery of an indemnity agreement in an amount reasonably satisfactory to the Company, or (in the case of mutilation) upon surrender and cancellation of this Warrant, the Company will issue, in lieu thereof, a new Warrant of like tenor and otherwise on terms identical to this Warrant.

12. **No Rights as Stockholder.** Until the exercise of this Warrant, the Registered Holder of this Warrant shall not have or exercise any rights by virtue hereof as a stockholder of the Company. The Registered Holder further acknowledges and agrees that upon the exercise of the Warrant, it shall execute the applicable joinder to, and be bound by and entitled to certain rights pursuant to, the terms of (i) that certain Third Amended and Restated Investors' Rights Agreement, dated as of October 27, 2017, among the Company and the stockholders of the Company party thereto; (ii) that certain Third Amended and Restated Co-Sale Agreement, dated as of October 27, 2017, among the Company and the stockholders of the Company party thereto; and (iii) that certain Third Amended and Restated Voting Agreement, dated as of October 27, 2017, among the Company and the stockholders of the Company party thereto, in each case, as amended after the date hereof (collectively, the "**Stockholder Agreements**").

13. **No Fractional Shares.** The Company is not required to issue any fractional shares of Warrant Stock in connection with any exercise hereunder. In lieu of any fractional shares which would otherwise be issuable, the Company may pay cash equal to the product of such fraction multiplied by the Fair Market Value of one share of such Warrant Stock on the date of exercise.

14. **Legends**. The certificates evidencing the Warrant Stock may bear one or all of the following legends.

(a) "THE SECURITIES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933 OR ANY STATE SECURITIES LAWS, AND HAVE BEEN ACQUIRED FOR INVESTMENT AND NOT WITH A VIEW TO, OR IN CONNECTION WITH, THE SALE OR DISTRIBUTION THEREOF. NO SUCH SALE OR DISTRIBUTION MAY BE EFFECTED WITHOUT AN EFFECTIVE REGISTRATION STATEMENT RELATED THERETO OR, IF REQUESTED BY THE COMPANY, AN OPINION OF COUNSEL IN A FORM SATISFACTORY TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED UNDER THE SECURITIES ACT OF 1933 OR APPLICABLE STATE SECURITIES LAWS."

(b) Any legend set forth in, or required by, the Stockholder Agreements.

(c) Any legend required by the blue sky laws of any state to the extent such laws are applicable to the Warrant Stock.

15. **Amendment or Waiver.** Any term of this Warrant may be amended or waived only by an instrument in writing signed by the party against which enforcement of the amendment or waiver is sought.

16. **Headings.** The headings in this Warrant are used for convenience only and are not to be considered in construing or interpreting any provision of this Warrant.

17. **Definitions.**

"**Affiliate**" has the meaning provided in the Credit Agreement.

"**Asset Sale**" has the meaning provided in Section 9(c).

"**Beneficial Ownership Threshold**" means 4.9%, provided that the Registered Holder may, upon not less than 61 calendar days' irrevocable notice to the Company, increase such percentage to 9.9%.

"**Business Day**" has the meaning provided in the Credit Agreement.

"**Certificate**" means the Company's Third Amended and Restated Certificate of Incorporation, as the same may be amended from time to time.

"**Commission**" means the United States Securities and Exchange Commission.

"**Common Stock**" means Company's common stock, par value $0.001 per share (or any security into which such shares are convertible).

"**Credit Agreement**" has the meaning provided in the introductory paragraph hereto.

"**Exchange Act**" means the Securities Exchange Act of 1934, as amended.

"**Exercise Price**" has the meaning provided in the introductory paragraph hereto.

"**Fair Market Value**" of a share of Warrant Stock as of a particular date shall mean:

(i) if shares of the Warrant Stock are traded on one or more securities exchanges, the average of the closing or last reported sale prices of the shares of Warrant Stock on the Principal Trading Market over the five day period ending five trading days prior to the applicable determination date;

(ii) if the shares of Warrant Stock are not so traded, but the shares of the Company into which the shares of Warrant Stock are convertible are so traded, then the Fair Market Value of the shares of Warrant Stock shall be deemed to be the fair market value of such shares as defined in clause (i), multiplied by the number of such shares into which each share of Warrant Stock is then convertible;

(iii) if the shares of Warrant Stock and shares of the Company into which the shares of Warrant Stock are convertible are not traded on a securities exchange, but are otherwise traded on an over-the-counter market or other similar market, the fair market value shall be deemed to be the average of the closing ask prices of such shares on the Principal Trading Market over the ten day period ending five trading days prior to the applicable determination date, as set forth in clause (i) or (ii) above, as applicable; and

(iv) if there is no public market for the shares of Warrant Stock or the shares into which the Warrant Stock are convertible, then fair market value shall be determined in good faith by the Board.

Notwithstanding the forgoing if the determination of Fair Market Value is in connection with (A) a Sale Transaction, then the Fair Market Value per share shall be the value per share of Warrant Stock to be realized in such pending transaction (including any contingent consideration receivable in connection therewith) or (B) an IPO, and if the Company's Registration Statement reflecting such public offering has been declared effective by the Commission, then the Fair Market Value shall be the initial "Price to Public" per share specified in the final prospectus with respect to the offering.

"**Initial Purchase Price**" has the meaning provided in the introductory paragraph hereto.

"**IPO**" means a firm commitment underwritten public offering of the Common Stock. For the avoidance of doubt an "IPO" shall not include a registration relating solely to employee benefit plans on Form S-1 or Form S-8 or similar forms that may be promulgated by the

Commission in the future, or a registration relating solely to a transaction of Form S-4 or similar forms that may be promulgated in the future.

"**Issuance Date**" means October 27, 2017.

"**Marketable Securities**" means securities meeting all of the following requirements: (i) the issuer thereof is then subject to the reporting requirements of Section 13 or Section 15(d) of the Exchange Act, and is then current in its filing of all reports and other information required under the Securities Act and the Exchange Act; (ii) the class and series of shares or other securities of the issuer that would be received by the Registered Holder in connection with the Sale Transaction if the Registered Holder exercised this Warrant on or prior to the closing thereof is then traded or quoted on a nationally recognized securities exchange, inter-dealer quotation system or over-the-counter market, and (iii) following the closing of such Sale Transaction, the Registered Holder would not be restricted from publicly re-selling all of the issuer's shares and/or other securities that would be received by the Registered Holder in such Sale Transaction if the Registered Holder exercised this Warrant in full on or prior to the closing of such Sale Transaction, except to the extent that any such restriction (x) arises solely under federal or state securities laws, rules or regulations or (y) relates to the Registered Holder's status as an affiliate of such issuer.

"**Person**" means any individual, corporation, partnership, trust, limited liability company, association or other entity.

"**Principal Trading Market**" means the national securities exchange or other trading market on which the stock is primarily listed on and quoted for trading (which, in the event the stock is sold on more than one such market, the market with the highest average daily trading volume of such stock over the 20 trading day period prior to the applicable date of determination).

"**Registered Holder**" has the meaning provided in the introductory paragraph hereto.

"**Qualified IPO**" has the meaning provided in the Certificate.

"**Registrar's Office**" has the meaning provided in Section 1(a).

"**Sale Transaction**" means a transaction contemplated by Article IV(B)(2)(f)(i) of the Certificate, disregarding the first and third exceptions set forth in the proviso of Article IV(B)(2)(f)(i)(2).

"**Securities Act**" means the Securities Act of 1933, as amended.

"**Securities Exchange Act**" means Securities Exchange Act of 1934, as amended.

"**Series B Preferred Stock**" has the meaning provided in the introductory paragraph hereto.

"**Stockholder Agreements**" has the meaning provided in Section 12.

"**Warrant Stock**" has the meaning provided in the introductory paragraph hereto.

18. **Blocker Provisions**. At any time following (i) an IPO or (ii) the time that the Company (or its successor) has a class of securities registered under Section 12 of the Securities Exchange Act or which is subject to Section 15(d) of the Securities Exchange Act (and solely during such period), the Registered Holder shall not have the right to receive shares of Warrant Stock upon exercise of this Warrant to the extent that, following such conversion, either (a) such Registered Holder's or its beneficial owner's (together with such Registered Holder's or such beneficial owner's Affiliates and such other persons or parties acting as a group together with the Registered Holder or any of the Registered Holder's Affiliates) aggregate voting power on a matter being voted on by holders of the Common Stock would exceed the Beneficial Ownership Threshold of the maximum voting power of the Common Stock or (b) such Registered Holder or such beneficial owner (together with such Registered Holder's or such beneficial owner's Affiliates and such other persons or parties acting as a group together with the Registered Holder or any of the Registered Holder's Affiliates) would beneficially own more than the Beneficial Ownership Threshold of the then outstanding Common Stock; provided, however, that such conversion restriction shall not apply in connection with, and subject to completion of, a third party tender offer for the Common Stock issuable thereupon or other Sale Transaction; and provided further that if such Registered Holder or beneficial owner is so prevented from receiving any Warrant Stock to which it would otherwise be entitled, the Company's obligation to deliver such Warrant Stock shall not be extinguished, and the Company shall deliver such Warrant Stock (or any designated portion thereof) within three Business Days following exercise of this Warrant and notice from the Registered Holder that receipt of such shares (or any designated portion thereof) would not be prohibited by this Section 18. Except as set forth in the foregoing sentence, for purposes of this Section 18, beneficial ownership shall be calculated in accordance with Section 13(d) of the Securities Exchange Act and the rules and regulations promulgated thereunder. To the extent that the limitation contained in this Section 18 applies, the determination of whether this Warrant is exercisable (in relation to other securities owned by the Registered Holder together with any Affiliates) and of which amount of this Warrant is exercisable shall be in the sole discretion of the Registered Holder, and the submission of a Notice of Exercise shall be deemed to be the Registered Holder's determination of whether this Warrant may be exercised (in relation to other securities owned by the Registered Holder together with any Affiliates) and which portion of this Warrant is exercisable, in each case subject to the limitation in this Section 18. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Securities Exchange Act and the rules and regulations promulgated thereunder.

19. **Governing Law.** This Warrant shall be governed, construed and interpreted in accordance with the laws of the State of Delaware, without giving effect to principles of conflicts of law.

20. **Dispute Resolution.**

(a) Each of the parties to this Warrant irrevocably agrees that any legal action, suit or proceeding arising out of or relating to this Warrant, the transactions contemplated hereby or the Warrant Stock, brought by any party against any other party shall be brought and determined in the Court of Chancery of the State of Delaware; provided that if jurisdiction is not then available in the Court of Chancery of the State of Delaware, then any such legal action, suit or proceeding

may be brought in any federal court located in the State of Delaware or any other Delaware state court. Each of the parties to this Warrant hereby irrevocably submits to the jurisdiction of the aforesaid courts for itself and with respect to its property, generally and unconditionally, with regard to any such action, suit or proceeding arising out of or relating to this Warrant and the transactions contemplated hereby. Each of the parties agrees not to commence any action, suit or proceeding relating thereto, except in the courts described above in Delaware, other than actions, suits or proceedings in any court of competent jurisdiction to enforce any judgment, decree or award rendered by any such court in Delaware as described herein. Each of the parties further agrees that notice as provided herein shall constitute sufficient service of process for any such action, suit or proceeding and the parties further waive any argument that such service is insufficient. Each of the parties hereby irrevocably and unconditionally waives, and agrees not to assert, by way of motion or as a defense, counterclaim or otherwise, in any action, suit or proceeding arising out of or relating to this Warrant or the transactions contemplated hereby, (i) any claim that it is not personally subject to the jurisdiction of the courts in Delaware as described herein for any reason, (ii) that it or its property is exempt or immune from jurisdiction of any such court or from any legal process commenced in such courts (whether through service of notice, attachment prior to judgment, attachment in aid of execution of judgment, execution of judgment or otherwise) or (iii) that (A) the suit, action or proceeding in any such court is brought in an inconvenient forum, (B) the venue of such suit, action or proceeding is improper or (C) this Warrant, or the subject matter hereof, may not be enforced in or by such courts.

(b) EACH PARTY TO THIS WARRANT HEREBY WAIVES ITS RIGHTS TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION ARISING OUT OF OR RELATING TO THIS WARRANT, OR THE TRANSACTIONS CONTEMPLATED HEREBY, INCLUDING THE WARRANT STOCK. THE SCOPE OF THIS WAIVER IS INTENDED TO BE ALL-ENCOMPASSING OF ANY AND ALL DISPUTES THAT MAY BE FILED IN ANY COURT AND THAT ARISE OUT OF OR RELATE TO THE SUBJECT MATTER OF THIS WARRANT, INCLUDING, WITHOUT LIMITATION, CONTRACT CLAIMS, TORT CLAIMS (INCLUDING NEGLIGENCE), BREACH OF DUTY CLAIMS, AND ALL OTHER COMMON LAW AND STATUTORY CLAIMS. THIS SECTION HAS BEEN FULLY DISCUSSED BY EACH OF THE PARTIES HERETO AND THESE PROVISIONS WILL NOT BE SUBJECT TO ANY EXCEPTIONS. EACH PARTY HERETO HEREBY FURTHER WARRANTS AND REPRESENTS THAT SUCH PARTY HAS REVIEWED THIS WAIVER WITH ITS LEGAL COUNSEL, AND THAT SUCH PARTY KNOWINGLY AND VOLUNTARILY WAIVES ITS JURY TRIAL RIGHTS FOLLOWING CONSULTATION WITH LEGAL COUNSEL.

21. **Survival of Representations**. Unless otherwise set forth in this Warrant, the warranties, representations and covenants of the Company and the Registered Holder contained in or made pursuant to this Warrant shall survive the execution and delivery of this Warrant and exercise of this Warrant.

22. **Successors and Assigns.** This Warrant shall be binding upon and inure to the benefit of the parties hereto and their respective successors and permitted assigns, provided that (i) the Registered Holder may only assign its rights, or delegate its obligations, hereunder in compliance with the provisions of Section 3(b), and (ii) except as set forth in Section 9, the Company shall

have no right to assign its rights, or to delegate its obligations, hereunder without the prior written consent of the Registered Holder.

23. **Counterparts.** This Warrant may be executed in two or more counterparts, each of which shall be deemed an original and all of which together shall constitute one instrument.

24. **Severability.** If one or more provisions of this Warrant are held to be unenforceable under applicable law, to the maximum extent permitted by law, such provision shall be excluded from this Warrant, the balance of this Warrant shall be interpreted as if such provision were so excluded and shall be enforceable in accordance with its terms.

25. **Delays or Omissions.** No delay or omission to exercise any right, power or remedy accruing to any party under this Warrant, upon any breach or default of any other party under this Warrant, shall impair any such right, power or remedy of such non-breaching or non-defaulting party nor shall it be construed to be a waiver of any such breach or default, or an acquiescence therein, or of or in any similar breach or default thereafter occurring; nor shall any waiver of any single breach or default be deemed a waiver of any other breach or default theretofore or thereafter occurring. Any waiver, permit, consent or approval of any kind or character on the part of any party of any breach or default under this Warrant, or any waiver on the part of any party of any provisions or conditions of this Warrant, must be in writing and shall be effective only to the extent specifically set forth in such writing. All remedies, either under this Warrant or by law or otherwise afforded to any party, shall be cumulative and not alternative.

26. **Notices.** Unless otherwise provided herein, any notice required or permitted by this Warrant shall be in writing and shall be deemed effective upon delivery, when delivered personally or by overnight courier and sent by facsimile or electronic mail, or 48 hours after being deposited in the U.S. mail, as certified or registered mail, with postage prepaid, addressed to the party to be notified at such party's address as set forth on the signature page, or as subsequently modified by written notice.

(signature page follows)

The Company and the Registered Holder have executed this Warrant as of the date stated on the first page.

PROGENITY, INC.

By: /s/ Eric Fox
Name: Eric Fox
Title: Vice President of Finance and Treasurer

Address:
4330 La Jolla Village Drive, Suite 200
San Diego, CA 92122

AGREED AND ACKNOWLEDGED,

ATHYRIUM OPPORTUNITIES III CO-INVEST 1 LP

By: Athyrium Opportunities Associates Co-Invest LLC,
its General Partner

By: /s/ Andrew C. Hyman
Name: Andrew C. Hyman
Title: Authorized Signatory

Buyer Contact Information:

c/o Athyrium Capital Management, LP
530 Fifth Avenue, Floor 25
New York, NY 10036
Attention: Andrew C. Hyman and Sam Helfaer

With a copy to:

Moore & Van Allen PLLC
100 North Tryon Street, Suite 4700
Charlotte, NC 28202
Attention: Tripp Monroe

EXHIBIT A

PURCHASE/EXERCISE FORM

To: Progenity, Inc. Dated:

The undersigned hereby irrevocably elects to exercise the right of purchase represented by Warrant No. __ for, and to purchase thereunder, the securities of _____ as provided for therein, and (check the applicable box(es)):

☐ Tenders herewith payment of the Exercise Price in the form of a wire in same-day funds, in the amount of $_____ for _____ shares of Warrant Stock.

☐ Elects a Net Issue Exercise pursuant to Section 1(b) of the Warrant and accordingly requests delivery of a net of _____ shares of Warrant Stock, calculated as follows:

$$X = \frac{Y\,(A-B)}{A} \qquad (\quad) = (\_\_\_\_\_)\,[(\_\_\_\_\_) - (\_\_\_\_\_)]$$
$$(\_\_\_\_\_)$$

X = the number of shares of Warrant Stock to be issued to the Registered Holder.
Y = The number of shares of Warrant Stock purchasable under the Warrant or, if only a portion of the Warrant is being exercised, the portion of the Warrant being cancelled.
A = the Fair Market Value of one share of Warrant Stock
B = Exercise Price (as adjusted to the date of such calculation)

The undersigned confirms, acknowledges and represents to the Company that each of the representations set forth in Section 6 of the Warrant, as to the undersigned, are true and correct as of the date hereof.

The undersigned further acknowledges that it has reviewed (i) that certain Third Amended and Restated Investors' Rights Agreement, dated as of October 27, 2017, among the Company and the stockholders of the Company party thereto; (ii) that certain Third Amended and Restated Co-Sale Agreement, dated as of October 27, 2017, among the Company and the stockholders of the Company party thereto; and (iii) that certain Third Amended and Restated Voting Agreement, dated as of October 27, 2017, among the Company and the stockholders of the Company party thereto, each as further amended, and agrees to execute the applicable joinders thereto and be bound by the terms therein.

Signature: _____

Name (print): _____

Title (if applic.): _____

Company (if applic.): _____

EXHIBIT B

ASSIGNMENT FORM

FOR VALUE RECEIVED, _____ hereby sells, assigns and transfers all of the rights of the undersigned under the attached Warrant with respect to the number of shares of Warrant Stock covered thereby set forth below, to:

Name of Assignee	**Address/Fax Number**	**No. of Shares***

1. **Obligations of Assignee.** Assignee agrees to take and hold the Warrant and any shares of Warrant Stock issued upon its exercise (the "**Securities**") subject to, and to be bound by, the terms and conditions set forth in the Warrant to the same extent as if Assignee were the original holder thereof.

2. **Investment Intent.** Assignee represents and warrants that the Securities are being acquired for investment for its own account, not as a nominee or agent, and not with a view to, or for resale in connection with, the distribution thereof, and that Assignee has no present intention of selling, granting any participation in, or otherwise distributing the Securities, nor does it have any contract, undertaking, agreement or arrangement for the same.

3. **Accredited Investor.** Assignee represents and warrants that he, she or it: (i) is an "accredited investor" within the meaning of Regulation D, Rule 501(a), promulgated by the Commission under the Securities Act, (ii) shall submit to the Company such further assurances of such status as may be reasonably requested by the Company, and (iii) is not, and no affiliate of Assignee who could stand as beneficial owner of the Warrant or the Warrant Stock is, subject to any of the "Bad Actor" disqualifications described in Securities Act Rule 506(d)(1) subsections (i) through (viii).

Dated: _____ Signature: _____

_____

_____

_____

* Not to be less than 150,000 shares, as adjusted.

Exhibit 4.3

Execution Version

FIRST AMENDMENT TO
SERIES B PREFERRED STOCK PURCHASE WARRANT

PROGENITY, INC.

This FIRST AMENDMENT TO SERIES B PREFERRED STOCK PURCHASE WARRANT (this "**Amendment**"), is made effective dated as of August 27, 2019, by and between PROGENITY, INC., a Delaware corporation (the "**Company**"), and ATHYRIUM OPPORTUNITIES III CO-INVEST 1 LP, a Delaware limited partnership (the "**Registered Holder**").

RECITALS

A. The Company and the Registered Holder are party to that certain Series B Preferred Stock Purchase Warrant (Warrant No. 1) to purchase securities of the Company, dated as of October 27, 2017 (the "**Warrant**").

B. Section 15 of the Warrant provides that the Warrant may be amended pursuant to a written instrument executed by the party against which enforcement of the amendment is sought.

C. The Company and the Registered Holder are the parties in interest to the Warrant as of the date hereof.

D. The Company and a fund affiliated with the Registered Holder (the "**Initial Purchaser**"), intend to enter into that certain Series B Preferred Stock Purchase Agreement, dated as of even date herewith (the "**Purchase Agreement**").

E. To induce the Initial Purchaser to enter into the Purchase Agreement and consummate the Initial Closing (as defined in the Purchase Agreement), the parties desire to enter into this Amendment to amend the Warrant as set forth herein.

AGREEMENT

NOW, THEREFORE, in consideration of the foregoing recitals and for other good and valuable consideration, the receipt and adequacy of which the parties acknowledge, the parties hereby agree as follows:

1. **Definitions**. Capitalized terms used in this Amendment but not defined in this Amendment shall have the meanings ascribed to them in the Warrant.

2. **Effectiveness**. This Amendment is contingent upon, and will become effective concurrent with the closing of the Initial Closing (the "**Effective Time**"). This Amendment will terminate if the Purchase Agreement is terminated prior to the Initial Closing.

3. **Amendments to Warrant**. At the Effective Time, the Preamble of the Warrant shall be amended and restated in its entirety as follows:

Progenity, Inc., a Delaware corporation (the "**Company**"), for value received, hereby certifies that ATHYRIUM OPPORTUNITIES III CO-INVEST 1 LP, or its registered assigns (the "**Registered Holder**"), is entitled, subject to the terms set forth below, to purchase from the Company, at any time after the date hereof and on or before the Expiration Date (as defined below), up to 1,818,182 shares of Series B Preferred Stock, par value $0.001, of the Company (the "**Series B Preferred Stock**"), at an initial purchase price of $2.75 per share (the "**Initial Purchase Price**"). The shares issuable upon exercise of this Warrant and the exercise price per share, as adjusted from time to time pursuant to the provisions of this Warrant, are sometimes hereinafter referred to as the "**Warrant Stock**" and the "**Exercise Price**," respectively. This Series B Preferred Stock Purchase Warrant (this "**Warrant**") is issued under and pursuant to that certain Credit and Security Agreement, dated as of the Issuance Date, by and among the Company, as borrower, the lenders party thereto, and Athyrium Opportunities III Co-Invest 1 LP, as collateral agent (as amended, modified, restated, refinanced, replaced or supplemented from time to time, the "**Credit Agreement**").

4. **No Further Adjustment for Share Split**. The Company and the Registered Holder agree that the adjustment to the terms of the Warrant herein are to take account of the share split of the Series B Preferred Stock, which share split became effective upon filing of the Fifth Amended and Restated Certificate of Incorporation on the date hereof and immediately prior to entry into this Amendment, and no further adjustment in the terms of the Warrant shall occur as a result of such filing.

5. **No Further Amendments**. Except as expressly amended by this Amendment, the Warrant shall remain in full force and effect in accordance with its terms.

6. **Representations of the Registered Holder**. The Registered Holder represents and warrants to the Company that as of the date hereof, the Registered Holder is the sole beneficial owner and record holder of the Warrant, and has full authority to enter into this Amendment.

7. **Amendment or Waiver.** Any term of this Amendment may be amended or waived only by an instrument in writing signed by the party against which enforcement of the amendment or waiver is sought.

8. **Headings.** The headings in this Amendment are used for convenience only and are not to be considered in construing or interpreting any provision of this Amendment.

9. **Entire Agreement**. This Amendment supersedes all prior discussions and agreements between the parties with respect to the subject matter hereof. The Warrant, as amended by this Amendment, contain the sole and entire agreement between the parties with respect to the subject matter hereof.

10. **Survival**. The warranties, representations and covenants of the Company and the Registered Holder contained in or made pursuant to this Amendment shall survive the execution and delivery of this Amendment.

11. **Governing Law.** This Amendment shall be governed, construed and interpreted in accordance with the laws of the State of Delaware, without giving effect to principles of conflicts of law. Section 20 of the Warrant is incorporated herein by reference.

12. **Severability**. If one or more provisions of this Amendment are held to be unenforceable under applicable law, to the maximum extent permitted by law, such provision shall be excluded from this Amendment, the balance of this Amendment shall be interpreted as if such provision were so excluded and shall be enforceable in accordance with its terms.

13. **Counterparts**. This Amendment may be executed in two or more counterparts, each of which shall be deemed an original and all of which together shall constitute one instrument.

[*Signature Pages Follow*]

IN WITNESS WHEREOF, each of the undersigned has duly executed this First Amendment to Series B Preferred Stock Purchase Warrant as of the date first written above.

COMPANY:

PROGENITY, INC.

By: /s/ Eric d'Esparbes
Name: Eric d'Esparbes
Title: Chief Financial Officer

REGISTERED HOLDER:

ATHYRIUM OPPORTUNITIES III CO-INVEST 1 LP

By: Athyrium Opportunities Associates III Co-Invest LLC, its general partner

By: /s/ Andrew C. Hyman
Name: Andrew C. Hyman
Title: Authorized Signatory

Exhibit 4.4

Execution Version

PROGENITY, INC.

FOURTH AMENDED AND RESTATED
INVESTORS' RIGHTS AGREEMENT

August 27, 2019

TABLE OF CONTENTS

PROGENITY, INC.

FOURTH AMENDED AND RESTATED INVESTORS' RIGHTS AGREEMENT

This Fourth Amended and Restated Investors' Rights Agreement (this "**Agreement**") is made and entered into as of the 27th day of August, 2019, by and among Progenity, Inc., a Delaware corporation (the "**Company**"), the holders of common stock, par value $0.001 per share, of the Company (the "**Common Stock**"), Series A Preferred Stock, par value $0.001 per share, of the Company (the "**Series A Preferred Stock**"), Series A-1 Preferred Stock, par value $0.001 per share, of the Company (the "**Series A-1 Preferred Stock**"), Series B Preferred Stock, par value $0.001 per share, of the Company (the "**Series B Preferred Stock**" and, together with the Series A Preferred Stock and the Series A-1 Preferred Stock, the "**Preferred Stock**") listed on Exhibit A to this Agreement (each, an "**Investor**" and collectively, the "**Investors**"), and the holders of Common Stock listed on Exhibit B to this Agreement (each a "**Founder**" and collectively, the "**Founders**", and, together with the Investors, the "**Stockholders**").

RECITALS

WHEREAS, the Company and certain of the Stockholders (the "**Existing Stockholders**") have previously entered into that certain Investors' Rights Agreement, dated as of January 18, 2012, which was subsequently amended and restated as of June 12, 2013, August 8, 2016, and October 27, 2017 (as amended, the "**Prior Agreement**");

WHEREAS, the Prior Agreement may be amended, and any provision therein waived, with the written consent of the Company and the holders of at least a majority of the outstanding Registrable Securities (as defined in the Prior Agreement);

WHEREAS, the Company and the Investors listed on Annex A of the Purchase Agreement (as defined below) (the "**Purchasers**"), have entered into that certain Series B Preferred Stock Purchase Agreement of even date herewith (the "**Purchase Agreement**"), which provides that as a condition to the closing of the purchase by the Purchasers of shares of Series B Preferred Stock, this Agreement must be executed and delivered by certain other Stockholders and the Company;

WHEREAS, a condition to the Company's obligation to consummate the transactions contemplated by the Purchase Agreement, is that holders of the Series A-1 Preferred Stock shall have been offered the opportunity to exchange their 1,250,000 shares of Series A-1 Preferred Stock for shares of Series B Preferred Stock pursuant to an Exchange Agreement, in the form attached thereto (the "**Series A-1 Exchange**"); and

WHEREAS, the Company and the Existing Stockholders set forth below desire to induce the Purchasers to purchase shares of Series B Preferred Stock pursuant to the Purchase Agreement by agreeing to the terms and conditions set forth below.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual promises and covenants set forth herein, the Company and the Existing Stockholders hereby agree that the Prior Agreement shall

be superseded and replaced in its entirety by this Agreement, and the Stockholders further agree as follows:

1. Defined Terms.

(a) For purposes of this Agreement:

(i) "**Affiliate**" means, with respect to any specified Person, any other Person who, directly or indirectly, controls, is controlled by, or is under common control with such specified Person, including without limitation any general partner, managing member, officer or director of such Person or any venture capital fund now or hereafter existing that is controlled by one or more general partners or managing members of, or shares the same management company with, such Person.

(ii) "**Athyrium Stockholder**" means each of Athyrium Opportunities Fund (A) LP, Athyrium Opportunities Fund (B) LP, Athyrium Opportunities III Co-Invest 1 LP, Athyrium Opportunities III Acquisition LP, and any of their respective Affiliates.

(iii) "**BCI**" means Beaver Creek Intermediate Fund, Ltd.

(iv) "**Board**" means the Board of Directors of the Company.

(v) "**Certificate**" means the Company's Fifth Amended and Restated Certificate of Incorporation, as amended from time-to-time.

(vi) "**Damages**" means any loss, damage, claim or liability (joint or several) to which a party hereto may become subject under the Securities Act, the Exchange Act, or other federal or state law, insofar as such loss, damage, claim or liability (or any action in respect thereof) arises out of or is based upon (i) any untrue statement or alleged untrue statement of a material fact contained in any registration statement of the Company, including any preliminary prospectus or final prospectus contained therein or any amendments or supplements thereto; (ii) any omission or alleged omission to state in any registration statement of the Company, including any preliminary prospectus or final prospectus contained therein or any amendments or supplements thereto, a material fact required to be stated therein, or necessary to make the statements therein not misleading; or (iii) any violation or alleged violation by the indemnifying party (or any of its agents or Affiliates) of the Securities Act, the Exchange Act, any state securities law, or any rule or regulation promulgated under the Securities Act, the Exchange Act, or any state securities law.

(vii) "**Exchange Act**" means the Securities Exchange Act of 1934, as amended (and any successor thereto) and the rules and regulations promulgated thereunder.

(viii) "**Form S-3**" means such form under the Securities Act as in effect on the date hereof or any registration form under the Securities Act subsequently adopted by the SEC that permits incorporation of substantial information by reference to other documents filed by the Company with the SEC.

(ix) "**GAAP**" means generally accepted accounting principles, as in effect from time to time in the United States.

(x) "**Holder**" means any holder of Registrable Securities who is party to this Agreement or any assignee thereof in accordance with Section 2.11 of this Agreement.

(xi) "**Initiating Holders**" means, collectively, Holders who properly initiate a registration request under this Agreement.

(xii) "**Person**" means any individual, corporation, partnership, trust, limited liability company, association or other entity.

(xiii) "**Qualified IPO**" means a firm commitment underwritten public offering by the Company of shares of Common Stock pursuant to a registration statement under the Securities Act, the "Price to Public" per share of Common Stock specified in the final prospectus of which is not less than $2.75 per share (appropriately adjusted for any stock split, stock dividend, stock combination or other recapitalization after the date hereof) and which results in aggregate cash proceeds to the Company of at least $50,000,000 (net of underwriting discounts and commissions).

(xiv) "**register**," "**registered**," and "**registration**" refer to a registration effected by preparing and filing a registration statement with the SEC or similar document in compliance with the Securities Act, and the declaration or ordering of effectiveness by the SEC of such registration statement or document.

(xv) "**Registrable Securities**" means (i) the shares of Common Stock issuable or issued upon conversion of the Preferred Stock, including any shares of Common Stock issued on or before the date hereof, upon conversion of preferred stock of the Company outstanding at any time, other than shares for which registration rights have terminated pursuant to Section 2.15 hereof, (ii) the shares of Common Stock issued pursuant to the Common Stock Purchase Agreement, dated as of August 8, 2016, by and between the Company and BCI, other than shares for which registration rights have terminated pursuant to Section 2.15 hereof, (iii) the shares of Common Stock issuable or issued upon conversion of the Warrant Shares (or, following a Qualified IPO, issuable upon exercise of the Warrant), other than shares for which registration rights have terminated pursuant to Section 2.15 hereof; and (iv) any other shares of Common Stock issued as (or issuable upon the conversion or exercise of any warrant, right or other security which is issued as) a dividend or other distribution with respect to, or in exchange for or in replacement of, the shares listed in clauses (i) through (iii); provided, however, that the foregoing definition shall exclude in all cases any Registrable Securities sold by a Person in a transaction in which such Person's rights under this Agreement are not assigned. Notwithstanding the foregoing, such shares of Common Stock shall only be treated as Registrable Securities if and so long as (A) they have not been sold to or through a broker or dealer or underwriter in a public distribution or a public securities transaction, (B) they have not been sold in a transaction exempt from the registration and prospectus delivery requirements of the Securities Act under Section 4(a)(1) or Rule 144 thereof so that all transfer restrictions, and restrictive legends with respect thereto, if any, are removed upon the consummation of such sale,

or (C) the Holder thereof is entitled to exercise any right provided in Section 2 in accordance with Section 2.15 below.

(xvi) The number of shares of "**Registrable Securities then outstanding**" shall be determined by adding the number of shares of Common Stock outstanding which are, and the number of shares of Common Stock issuable pursuant to then exercisable or convertible securities which are, Registrable Securities. For the avoidance of doubt, the Warrant Shares shall not be deemed outstanding until issued upon exercise of the Warrant.

(xvii) "**Restricted Securities**" means the securities of the Company required to bear the legend set forth in Section 2.14(b) hereof.

(xviii) "**Rule 144**" means Rule 144 promulgated by the SEC under the Securities Act.

(xix) "**Rule 145**" means Rule 145 promulgated by the SEC under the Securities Act.

(xx) "**SEC**" means the Securities and Exchange Commission.

(xxi) "**Securities Act**" means the Securities Act of 1933, as amended (and any successor thereto) and the rules and regulations promulgated thereunder.

(xxii) "**Selling Expenses**" means all underwriting discounts, selling commissions, and stock transfer taxes applicable to the sale of Registrable Securities, and fees and disbursements of counsel for any Holder, except for the fees and disbursements of the Selling Holder Counsel borne and paid by the Company as provided in Section 2.6.

(xxiii) "**Warrant**" means the Series B Preferred Stock Purchase Warrant No. 1 issued by the Company to Athyrium Opportunities III Co-Invest 1 LP, dated as of October 27, 2017, to purchase up to 1,416,431 shares of Series B Preferred Stock, as amended from time to time, including by the Warrant Amendment (as defined below).

(xxiv) "**Warrant Amendment**" means an amendment to the Warrant to provide that 1,818,182 shares of Series B Preferred Stock shall be issuable thereunder, at an exercise price of $2.75 per share of Series B Preferred Stock (subject to adjustment as set forth in the Warrant).

(xxv) "**Warrant Shares**" means the shares of Series B Preferred Stock issuable upon the exercise of the Warrant (or, following a Qualified IPO, shares of Common Stock issuable upon exercise of the Warrant).

(b) The following terms have the meaning set forth in the Sections referenced below:

Definition	Location
Affiliated Fund	2.11(iii)
Agreement	Preamble
Common Stock	Preamble
Company	Preamble
Existing Stockholders	Recitals
Family Trust	2.11(v)
Founder	Preamble
Fully-Exercising Investor	3.3(b)
Immediate Family Member	2.11(iv)
Investor	Preamble
Joinder	2.11
Notice	3.3(a)
Preferred Stock	Preamble
Prior Agreement	Recitals
Purchase Agreement	Recitals
Purchasers	Recitals
Selling Holder Counsel	2.6
Series A Preferred Stock	Preamble
Series A-1 Exchange	Recitals
Series A-1 Preferred Stock	Preamble
Series B Preferred Stock	Preamble
Shares	3.3
Stockholders	Preamble

(c) The word "including" and words of similar import when used in this Agreement will mean "including, without limitation," unless otherwise specified. Unless the context clearly otherwise requires, the word "or" shall not be exclusive and shall mean "and/or".

2. **Registration Rights**. The Company and the Investors covenant and agree as follows:

2.1 **Request for Registration**.

(a) If the Company shall receive at any time after the date that is 210 days after the effective date of the first registration statement for a public offering of Common Stock (other than a registration statement relating either to the sale of securities to employees, directors or consultants of the Company pursuant to a stock option, stock purchase or similar plan or transaction covered by Rule 145), a written request from the Holders of a majority of the Registrable Securities then outstanding that the Company file a registration statement under the Securities Act covering the registration of Registrable Securities with an anticipated aggregate offering price, net of underwriting discounts and commissions, of at least $20,000,000, then the Company shall, within 10 days after receipt thereof, give written notice of such request to all Holders and shall, subject to the limitations of Section 2.1(b), use its commercially reasonable efforts to effect as soon as practicable the registration under the Securities Act of all Registrable Securities that the Holders request in accordance with Section 4.5 to be registered within 20 days after the mailing of such notice by the Company, including within 90 days after the receipt of such request file a registration statement covering all such Registrable Securities.

(b) If the Initiating Holders intend to distribute the Registrable Securities covered by their request by means of an underwriting, they shall so advise the Company as a part of their request made pursuant to this Section 2.1 and the Company shall include such information in the written notice referred to in Section 2.1(a). The underwriter(s) will be selected by a majority in interest of the Initiating Holders and shall be reasonably acceptable to the Company. In such event, the right of any Holder to include its Registrable Securities in such registration shall be conditioned upon such Holder's participation in such underwriting and the inclusion of such Holder's Registrable Securities in the underwriting (unless otherwise mutually agreed by a majority in interest of the Initiating Holders and such Holder) to the extent provided herein. All Holders proposing to distribute their securities through such underwriting shall (together with the Company as provided in Section 2.4(e)) enter into an underwriting agreement in customary form with the underwriter or underwriters selected for such underwriting. Each Holder participating in such underwriting shall also perform its obligations under such an agreement. Notwithstanding any other provision of this Section 2.1, if the underwriter(s) advise(s) the Initiating Holders in writing that marketing factors require a limitation of the number of shares to be underwritten, then the Initiating Holders shall so advise all Holders of Registrable Securities that would otherwise be underwritten pursuant hereto, and the number of shares of Registrable Securities that may be included in the underwriting shall be allocated among all participating Holders thereof, including the Initiating Holders, in proportion (as nearly as practicable) to the amount of Registrable Securities of the Company owned by each participating Holder; provided, however, that the number of shares of Registrable Securities to be included in such underwriting shall not be reduced unless all other securities are first entirely excluded from the underwriting.

(c) Notwithstanding the foregoing obligations, if the Company furnishes to Holders requesting a registration statement pursuant to this Section 2.1, a certificate signed by the Chief Executive Officer of the Company stating that in the good faith judgment of the Board, it would be seriously detrimental to the Company and its stockholders for such registration statement to be filed, become effective or remain effective and it is therefore essential to defer the filing of such registration statement, the Company shall have the right to defer such filing for a period of not more than 120 days after receipt of the request of the Initiating Holders; provided, however, that the Company may not utilize this right more than once in any twelve-month period.

(d) In addition, the Company shall not be obligated to effect, or to take any action to effect, any registration pursuant to this Section 2.1:

(i) After the Company has effected two registrations pursuant to this Section 2.1 and such registrations have been declared or ordered effective;

(ii) During the period starting with the date 90 days prior to the Company's good faith estimate of the date of filing of, and ending on a date 90 days after the effective date of, a registration subject to Section 2.2 hereof, unless such offering is the initial public offering of the Company's securities, in which case, ending on a date 210 days after the effective date of such registration subject to Section 2.2 hereof; provided that the Company is actively employing in good faith all commercially reasonable efforts to cause any such registration statement to become effective; or

(iii) If the Initiating Holders propose to dispose of shares of Registrable Securities that may be immediately registered on Form S-3 pursuant to a request made pursuant to Section 2.3 below.

2.2 **Company Registration**. If (but without any obligation to do so) the Company proposes to register (including, for this purpose, a registration effected by the Company for stockholders other than the Holders) any of its Common Stock under the Securities Act in connection with the public offering of such securities solely for cash (other than a registration relating solely to the sale of securities to participants in a Company stock plan or a transaction covered by Rule 145, a registration in which the only stock being registered is Common Stock issuable upon conversion of debt securities which are also being registered, or any registration on any form which does not include substantially the same information as would be required to be included in a registration statement covering the sale of the Registrable Securities), the Company shall, at such time, promptly give each Holder written notice of such registration. Upon the written request of each Holder given within 20 days after mailing of such notice by the Company in accordance with Section 4.5, the Company shall, subject to the provisions of Section 2.7, cause to be registered under the Securities Act all of the Registrable Securities that each such Holder has requested to be registered in such registration. The Company shall have the right to terminate or withdraw any registration initiated by it under this Section 2.2 before the effective date of such registration, whether or not any Holder has elected to include Registrable Securities in such registration.

2.3 **Form S-3 Registration**. In case the Company shall receive from any Holder or Holders of a majority of the Registrable Securities then outstanding a written request or requests that the Company effect a registration on Form S-3 and any related qualification or compliance with respect to all or a part of the Registrable Securities owned by such Holder or Holders, the Company will:

(a) promptly give written notice of the proposed registration, and any related qualification or compliance, to all other Holders; and

(b) as soon as practicable, effect such registration and all such qualifications and compliances as may be so requested and as would permit or facilitate the sale and distribution of all or such portion of such Holder's or Holders' Registrable Securities as are specified in such request, together with all or such portion of the Registrable Securities of any other Holder or Holders joining in such request as are specified in a written request given within 15 days after receipt of such written notice from the Company; provided, however, that the Company shall not be obligated to effect any such registration, qualification or compliance, pursuant to this Section 2.3:

(i) if Form S-3 is not available for such offering by the Holders;

(ii) if the Holders, together with the holders of any other securities of the Company entitled to inclusion in such registration, propose to sell Registrable Securities and such other securities (if any) at an aggregate price to the public (net of any underwriters' discounts or commissions) of less than $10,000,000;

(iii) if the Company shall furnish to the Holders a certificate signed by the President of the Company stating that in the good faith judgment of the Board, it would be seriously detrimental to the Company and its stockholders for such Form S-3 Registration to be filed, become effective or remain effective at such time, in which event the Company shall have the right to defer the filing of the Form S-3 registration statement for a period of not more than 120 days after receipt of the request of the Holder or Holders under this Section 2.3; provided, however, that the Company shall not utilize this right more than once in any 12-month period;

(iv) if the Company has, within the 12-month period preceding the date of such request, already effected two registrations on Form S-3 for the Holders pursuant to this Section 2.3;

(v) in any particular jurisdiction in which the Company would be required to qualify to do business or to execute a general consent to service of process in effecting such registration, qualification or compliance, unless the Company is already subject to service in such jurisdiction; or

(vi) during the period ending 180 days after the effective date of a registration statement subject to Section 2.1 or Section 2.2.

(c) Subject to the foregoing, the Company shall file a registration statement covering the Registrable Securities and other securities so requested to be registered as soon as practicable after receipt of the request or requests of the Holders. Registrations effected pursuant to this Section 2.3 shall not be counted as demands for registration or registrations effected pursuant to Sections 2.1.

2.4 **Obligations of the Company**. Whenever required under this Section 2 to effect the registration of any Registrable Securities, the Company shall, as soon as practicable:

(a) Prepare and file with the SEC a registration statement with respect to such Registrable Securities and use its commercially reasonable efforts to cause such registration statement to become effective, and, upon the request of the Holders of a majority of the Registrable Securities registered thereunder, keep such registration statement effective for up to 120 days or, if earlier, until the distribution described in such registration statement is completed. The Company shall not be required to file, cause to become effective or maintain the effectiveness of any registration statement that contemplates a distribution of securities on a delayed or continuous basis pursuant to Rule 415 under the Securities Act.

(b) Prepare and file with the SEC such amendments and supplements to such registration statement, and the prospectus used in connection with such registration statement, as may be necessary to comply with the provisions of the Securities Act with respect to the disposition of all securities covered by such registration statement for up to 120 days or until the distribution described in such registration statement is completed, if earlier.

(c) Furnish to the selling Holders such numbers of copies of a prospectus, including a preliminary prospectus, in conformity with the requirements of the Securities Act, and such other documents as the Holders may reasonably request in order to

facilitate the disposition of Registrable Securities owned by them pursuant to such registration statement.

(d) Use its commercially reasonable efforts to register and qualify the securities covered by such registration statement under such other securities or Blue Sky laws of such U.S. jurisdictions as shall be reasonably requested by the selling Holders, provided that the Company shall not be required in connection therewith or as a condition thereto to qualify to do business or to file a general consent to service of process in any such states or jurisdictions, unless the Company is already subject to service in such jurisdiction.

(e) In the event of any underwritten public offering, enter into and perform its obligations under an underwriting agreement, in usual and customary form, with the managing underwriter of such offering.

(f) Notify each Holder of Registrable Securities covered by such registration statement at any time when a prospectus relating thereto is required to be delivered under the Securities Act of the happening of any event as a result of which the prospectus included in such registration statement, as then in effect, includes an untrue statement of a material fact or omits to state a material fact required to be stated therein or necessary to make the statements therein not misleading in the light of the circumstances then existing, such obligation to continue for 120 days.

(g) Use its commercially reasonable efforts to cause all such Registrable Securities covered by such registration statement to be listed on a national securities exchange or trading system and each securities exchange and trading system (if any) on which similar securities issued by the Company are then listed.

(h) Provide a transfer agent and registrar for all Registrable Securities registered pursuant to this Agreement and provide a CUSIP number for all such Registrable Securities, in each case not later than the effective date of such registration.

(i) Use its commercially reasonable efforts to furnish, at the request of any Holder requesting registration of Registrable Securities pursuant to this Section 2, on the date that such Registrable Securities are delivered to the underwriters for sale in connection with a registration pursuant to this Section 2, if such securities are being sold through underwriters, or if such securities are not being sold through underwriters, on the date that the registration statement with respect to such securities becomes effective:

(i) an opinion, dated such date, of the counsel representing the Company for the purposes of such registration, in form and substance as is customarily given to underwriters in an underwritten public offering, addressed to the underwriters or, if none, to the Holders requesting registration of Registrable Securities; and

(ii) a letter dated such date, from the independent certified public accountants of the Company, in form and substance as is customarily given by independent certified public accountants to underwriters in an underwritten public offering and reasonably satisfactory to the underwriters, and addressed to the underwriters, if any, or, if none, to the Holders requesting registration of Registrable Securities.

2.5 **Furnish Information**. It shall be a condition precedent to the obligations of the Company to take any action pursuant to this Section 2 with respect to the Registrable Securities of any selling Holder that such Holder shall furnish to the Company such information regarding itself, the Registrable Securities held by it, and the intended method of disposition of such securities as is reasonably required to effect the registration of such Holder's Registrable Securities. The Company shall have no obligation with respect to any registration requested pursuant to Section 2.1 or Section 2.3 of this Agreement if, as a result of the application of the preceding sentence, the number of shares or the anticipated aggregate offering price of the Registrable Securities to be included in the registration does not equal or exceed the number of shares or the anticipated aggregate offering price required to originally trigger the Company's obligation to initiate such registration as specified in Section 2.1(a) or Section 2.3(b)(ii), whichever is applicable.

2.6 **Expenses of Registration**. All expenses (other than Selling Expenses) incurred in connection with registrations, filings or qualifications pursuant to this Section 2, including all registration, filing and qualification fees, printers' and accounting fees, fees and disbursements of counsel for the Company, and the reasonable fees and disbursements of one counsel for the selling Holders ("**Selling Holder Counsel**") selected by them with the approval of the Company, which approval shall not be unreasonably withheld and which fees and disbursements shall not exceed $30,000 in the aggregate, shall be borne by the Company; provided, however, that the Company shall not be required to pay for any expenses of any registration proceeding begun pursuant to Section 2.1 if the registration request is subsequently withdrawn at the request of the Holders of a majority of the Registrable Securities to be registered (in which case all selling Holders shall bear such expenses pro rata based upon the number of Registrable Securities that were to be included in the withdrawn registration), unless the Holders of a majority of the Registrable Securities agree to forfeit their right to one demand registration pursuant to Section 2.1; provided further, however, that if, at the time of such withdrawal, the Holders (i) have learned of a material adverse change in the condition, business, or prospects of the Company that was not known to the Holders at the time of their request and (ii) have withdrawn the request with reasonable promptness following learning of such material adverse change, then the Holders shall not be required to pay any of such expenses and shall not forfeit their right to one demand registration pursuant to Section 2.1. All Selling Expenses relating to Registrable Securities registered pursuant to this Section 2 shall be borne and paid by the Holders pro rata on the basis of the number of Registrable Securities registered on their behalf.

2.7 **Underwriting Requirements**. In connection with any offering involving an underwriting of shares of the Company's capital stock pursuant to Section 2.2, the Company shall not be required under Section 2.2 to include any of the Holders' Registrable Securities in such underwriting unless the Holders accept the terms of the underwriting as agreed upon between the Company and the underwriters selected by it (or by other Persons entitled to select the underwriters), and then only in such quantity as the underwriters determine in their sole discretion will not jeopardize the success of the offering by the Company. If the total amount of securities, including Registrable Securities, requested by stockholders to be included in such offering exceeds the amount of securities sold (other than by the Company) that the underwriters determine in their sole discretion is compatible with the success of the offering, then the Company shall be required to include in the offering only that number of such securities,

including Registrable Securities, which the underwriters and the Company determine in their sole discretion will not jeopardize the success of the offering (the securities so included to be apportioned pro rata among the selling Holders according to the total amount of securities entitled to be included therein owned by each selling Holder or in such other proportions as shall mutually be agreed to by all such selling Holders) but in no event shall the amount of securities of the selling Holders included in the offering be reduced below 15% of the total amount of securities included in such offering, unless (i) such offering is the initial public offering of the Company's securities, or (ii) all other securities, other than securities sold by the Company, are entirely excluded from the offering; in which case, the selling Holders may be excluded if the underwriters make the determination described above. For purposes of the preceding parenthetical concerning apportionment, for any selling Holder that is a holder of Registrable Securities and a partnership, limited liability company, or corporation, the partners, members, retired partners, retired members, stockholders and Affiliates of such holder, or the estates and family members of any such partners, retired partners, members and retired members and any trusts for the benefit of any of the foregoing Persons shall be deemed to be a single "selling Holder," and any pro-rata reduction with respect to such "selling Holder" shall be based upon the aggregate amount of shares carrying registration rights owned by all entities and individuals included in such "selling Holder," as defined in this sentence.

2.8 **Delay of Registration**.

(a) Notwithstanding anything contained herein to the contrary, if the filing, initial effectiveness or continued use of a registration statement would require the Company to make a public disclosure of material non-public information, which disclosure in the good faith judgment of the Board (i) would be required to be made in any registration statement so that such registration statement would not be materially misleading, (ii) would not be required to be made at such time but for the filing, effectiveness or continued use of such registration statement, and (iii) would in the good faith judgment of the Board (A) reasonably be expected to adversely affect the Company or its business if made at such time, or (B) reasonably be excepted to interfere with the Company's ability to effect a planned or proposed acquisition, disposition, financing, reorganization, recapitalization or similar transaction or (C) otherwise require premature disclosure of material information that the Company has a bona fide business purpose for preserving as confidential, then the Company may upon giving prompt written notice of such determination of the Board to the selling Holders in such registration (each of whom hereby agrees to maintain the confidentiality of all information disclosed to such Holders, provided that the Company shall not be required to disclose the nature of the delay or other confidential information) delay the filing or initial effectiveness of, or suspend use of, such registration statement; provided, that the Company shall not be permitted to do so (x) for more than sixty (60) days for a given occurrence of such a circumstance or (y) more than two (2) times during any twelve-month period. In the event the Company exercises its rights under the preceding sentence, the Holders agree to suspend, promptly upon their receipt of the notice referred to above, their use of any prospectus relating to such registration in connection with any sale or offer to sell Registrable Securities. If the Company so postpones the filing of a prospectus or the effectiveness of a registration statement, the Initiating Holders will be entitled to withdraw such request and, if such request is promptly withdrawn, such registration request will not count for the purposes of the limitation set forth in Section 2.1 or Section 2.3. The

Company will pay all registration expenses incurred in connection with any such aborted registration or prospectus.

(b) No Holder shall have any right to obtain or seek an injunction restraining or otherwise delaying any registration pursuant to this Agreement as the result of any controversy that might arise with respect to the interpretation or implementation of this Section 2.

2.9 **Indemnification**. In the event any Registrable Securities are included in a registration statement under this Section 2:

(a) To the extent permitted by law, the Company will indemnify and hold harmless each selling Holder, any underwriter (as defined in the Securities Act) for each such Holder and each Person, if any, who controls such Holder or underwriter within the meaning of the Securities Act or the Exchange Act, against any Damages arising from or in connection with such registration, and the Company will pay to each such Holder, underwriter, or controlling Person, as incurred, any legal or other expenses reasonably incurred thereby in connection with investigating or defending any claim or proceeding for such Damages; provided, however, that the indemnity agreement contained in this Section 2.9(a) shall not apply to amounts paid in settlement of any such claim or proceeding if such settlement is effected without the consent of the Company, which consent shall not be unreasonably withheld, nor shall the Company be liable to any Holder, underwriter or controlling Person, for any Damages to the extent that they arise out of or are based upon actions or omissions made in reliance upon and in conformity with written information furnished by or on behalf of any such Holder, underwriter or controlling Person expressly for use in connection with such registration.

(b) To the extent permitted by law, each selling Holder, severally and not jointly, will indemnify and hold harmless the Company, and each of its directors, each of its officers who has signed the registration statement, each Person, if any, who controls the Company within the meaning of the Securities Act or the Exchange Act, any underwriter (as defined in the Securities Act), any other Holder selling securities in such registration statement and any controlling Person of any such underwriter or other Holder, against any Damages, in each case to the extent (and only to the extent) that such Damages arise out of or are based upon actions or omissions made in reliance upon and in conformity with written information furnished by or on behalf of such selling Holder expressly for use in connection with such registration; and each such selling Holder will pay, as incurred, to the Company and each other aforementioned Person any legal or other expenses reasonably incurred thereby in connection with investigating or defending any claim or proceeding from which Damages may result; provided, however, that the indemnity agreement contained in this Section 2.9(b) shall not apply to amounts paid in settlement of any such claim or proceeding if such settlement is effected without the consent of the Holder, which consent shall not be unreasonably withheld; provided, further, that in no event shall the aggregate amounts payable by any Holder by way of indemnity or contribution under this Section 2.9(b) exceed the net proceeds from the offering received by such Holder, except in the case of willful misconduct or fraud by such Holder.

(c) Promptly after receipt by an indemnified party under this Section 2.9 of notice of the commencement of any action (including any governmental action)

for which a party may be entitled to indemnification hereunder, such indemnified party will, if a claim in respect thereof is to be made against any indemnifying party under this Section 2.9, deliver to the indemnifying party a written notice of the commencement thereof and the indemnifying party shall have the right to participate in such action and, to the extent the indemnifying party so desires, participate jointly with any other indemnifying party similarly noticed, to assume the defense thereof with counsel mutually satisfactory to the parties; provided, however, that an indemnified party (together with all other indemnified parties which may be represented without conflict by one counsel) shall have the right to retain one separate counsel, with the reasonable fees and expenses to be paid by the indemnifying party, if representation of such indemnified party by the counsel retained by the indemnifying party would be inappropriate due to actual or potential differing interests between such indemnified party and any other party represented by such counsel in such proceeding. The failure to deliver written notice to the indemnifying party within a reasonable time of the commencement of any such action, if prejudicial to its ability to defend such action, shall relieve such indemnifying party of any liability to the indemnified party under this Section 2.9, but the omission so to deliver written notice to the indemnifying party will not relieve it of any liability that it may have to any indemnified party otherwise than under this Section 2.9.

(d) If the indemnification provided for in this Section 2.9 is held by a court of competent jurisdiction to be unavailable to an indemnified party with respect to any Damages referred to herein, then the indemnifying party, in lieu of indemnifying such indemnified party hereunder, shall contribute to the amount paid or payable by such indemnified party as a result of such Damages in such proportion as is appropriate to reflect the relative fault of the indemnifying party on the one hand and of the indemnified party on the other in connection with the statements or omissions that resulted in such Damages as well as any other relevant equitable considerations; provided that in no event (i) shall any contribution by a Holder under this Section 2.9(d) exceed the net proceeds from the offering received by such Holder, except in the case of willful misconduct or fraud by such Holder, and (ii) no person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) will be entitled to contribution from any Person who is not guilty of such fraudulent misrepresentation. The relative fault of the indemnifying party and of the indemnified party shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission to state a material fact relates to information supplied by the indemnifying party or by the indemnified party and the parties' relative intent, knowledge, access to information, and opportunity to correct or prevent such statement or omission.

(e) Notwithstanding the foregoing, to the extent that the provisions on indemnification and contribution contained in the underwriting agreement entered into in connection with the underwritten public offering are in conflict with the foregoing provisions, the provisions in the underwriting agreement shall control.

(f) The obligations of the Company and Holders under this Section 2.9 shall survive the completion of any offering of Registrable Securities in a registration under this Section 2, and otherwise shall survive the termination of this Agreement.

2.10 **Reports Under the Exchange Act**. With a view to making available to the Holders the benefits of Rule 144 and any other rule or regulation of the SEC that may at any

time permit a Holder to sell securities of the Company to the public without registration or pursuant to a registration on Form S-3, the Company agrees to:

(a) make and keep available adequate public information, as those terms are understood and defined in Rule 144, at all times after 90 days after the effective date of the first registration statement filed by the Company for the offering of its Common Stock to the general public so long as the Company remains subject to the periodic reporting requirements under Sections 13 or 15(d) of the Exchange Act;

(b) take such action, including the voluntary registration of its Common Stock under Section 12 of the Exchange Act, as is necessary to enable the Holders to utilize Form S-3 for the sale of their Registrable Securities, such action to be taken as soon as practicable after the end of the fiscal year in which the first registration statement filed by the Company for the offering of its Common Stock to the general public is declared effective;

(c) use commercially reasonable efforts to file with the SEC in a timely manner all reports and other documents required of the Company under the Exchange Act (at any time after the Company has become subject to such reporting requirements); and

(d) furnish to any Holder, so long as the Holder owns any Registrable Securities, forthwith upon request:

(i) to the extent accurate, a written statement by the Company that it has made adequate current public information as understood under Rule 144 (at any time after 90 days after the effective date of the first registration statement filed by the Company as described in clause (a) above), complied with the reporting requirements of the Exchange Act (at any time after the Company has become subject to such reporting requirements), or that it qualifies as a registrant whose securities may be resold pursuant to Form S-3 (at any time after the Company so qualifies);

(ii) a copy of the most recent annual or quarterly report of the Company and such other reports and documents, in each case, so filed by the Company under the Exchange Act; and

(iii) such other information as may be reasonably requested in availing any Holder of any rule or regulation of the SEC which permits the selling of any such securities without registration (at any time after the Company has become subject to the reporting requirements under the Exchange Act) or pursuant to Form S-3 (at any time after the Company so qualifies to use such form).

2.11 **Assignment of Registration Rights**. The rights to cause the Company to register Registrable Securities pursuant to this Section 2 may be assigned (but only with all related obligations) by a Holder to a transferee or assignee:

(i) of at least 1,000,000 shares of such Registrable Securities (subject to adjustment for stock splits, stock dividends, reclassification or the like);

(ii) that is an Affiliate, subsidiary, parent, partner, limited partner, retired partner, member, retired member or stockholder of a Holder;

(iii) that is an affiliated fund or entity of the Holder, which means with respect to a limited liability company or a limited liability partnership, a fund or entity managed by the same manager or managing member or general partner or management company or by an entity controlling, controlled by, or under common control with such manager or managing member or general partner or management company (such a fund or entity, an "**Affiliated Fund**");

(iv) who is a Holder's child, stepchild, grandchild, parent, stepparent, grandparent, spouse, sibling, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law, or sister-in-law (or any further transfers between such Persons) (such a relation, a Holder's "**Immediate Family Member**", which term shall include adoptive relationships); or

(v) any custodian or trustee of any trust, partnership or limited liability company for the benefit of, or the ownership interests of which are owned wholly by, such Holder or any Immediate Family Member of such Holder (such an entity, a Holder's "**Family Trust**") or any further transfers between such Persons;

provided, that in each case, the Company is, within a reasonable time after such transfer, furnished with written notice of the name and address of such transferee or assignee and the securities with respect to which such registration rights are being assigned; and provided, further, that such assignment shall be effective only if the transferee agrees to be bound by this Agreement by executing a joinder in the form attached hereto as Exhibit C (the "**Joinder**"), and immediately following such transfer the further disposition of such securities by the transferee or assignee is restricted under the Securities Act. For the purposes of determining the number of shares of Registrable Securities held by a transferee or assignee, the holdings of transferees and assignees of (A) (x) a partnership who are partners or retired partners of such partnership, or (y) a limited liability company who are members or retired members of such limited liability company (including Immediate Family Members of such partners or members who acquire Registrable Securities by gift, will or intestate succession) shall be aggregated together and with the partnership or limited liability company, and (B) a Holder's Immediate Family Members and Family Trust, shall be aggregated together and with such Holder; provided that all assignees and transferees who do not hold at least 1,000,000 shares of Registrable Securities (subject to adjustment for stock splits, stock dividends, reclassification or the like) shall have a single attorney-in-fact for the purpose of exercising any rights, receiving notices or taking any action under this Section 2.

2.12 **Limitations on Subsequent Registration Rights**. From and after the date of this Agreement, the Company shall not, without the prior written consent of the Holders of a majority of the Registrable Securities then outstanding, enter into any agreement with any holder or prospective holder of any securities of the Company which would allow such holder or prospective holder (a) to include such securities in any registration filed under Section 2.1 hereof, unless, under the terms of such agreement, such holder or prospective holder may include such securities in any such registration only to the extent that the inclusion of such securities will

not reduce the amount of the Registrable Securities of the Holders which is included; or (b) to make a demand registration which could result in such registration statement being declared effective (i) prior to the date a registration statement is required to be effective under Section 2.1(a) or (ii) within 120 days of the effective date of any registration effected pursuant to Section 2.1.

2.13 **Lock-Up Agreement**.

(a) **Lock-Up Period; Agreement**. In connection with the initial public offering of the Company's equity securities and upon request of the Company or the underwriters managing such offering of the Company's equity securities, each Holder agrees not to sell, make any short sale of, loan, grant any option for the purchase of, or otherwise dispose of any securities of the Company (or interests therein), however or whenever acquired (other than those included in the registration) without the prior written consent of the Company or such underwriters, as the case may be, for such period of time (not to exceed 210 days) from the effective date of such registration as may be requested by the Company or such managing underwriters and to execute an agreement in customary form reflecting the foregoing as may be requested by the underwriters at the time of the Company's initial public offering. In addition, upon request of the Company or the underwriters managing a public offering of the Company's securities (other than the initial public offering), the Holder agrees to be bound by similar restrictions, and to sign a similar agreement, in connection with no more than one additional registration statement filed within 12 months after the closing date of the initial public offering, provided that the duration of the lock-up period with respect to such additional registration shall not exceed 90 days from the effective date of such additional registration statement.

(b) **Limitations**. The obligations described in Section 2.13(a) shall apply only if all officers and directors of the Company, all one-percent securityholders, and all other Persons with registration rights (whether or not pursuant to this Agreement) enter into similar agreements, and shall not apply to a registration relating solely to employee benefit plans, or to a registration relating solely to a transaction pursuant to Rule 145.

(c) **Stop-Transfer Instructions**. In order to enforce the foregoing covenants, the Company may impose stop-transfer instructions with respect to the securities of each Holder (and the securities of every other Person subject to the restrictions in Section 2.13(a)).

(d) **Transferees Bound**. Each Holder agrees that it will not transfer securities of the Company unless each transferee agrees in writing to be bound by all of the provisions of this Section 2.13, provided that this Section 2.13(d) shall not apply to transfers pursuant to a registration statement or transfers after the 12-month anniversary of the effective date of the Company's initial registration statement subject to this Section 2.13.

2.14 **Restrictions on Transfer**.

(a) The Preferred Stock and the Registrable Securities shall not be sold, pledged, or otherwise transferred, and the Company shall not recognize and shall issue stop-transfer instructions to its transfer agent with respect to any such sale, pledge, or transfer,

except upon the conditions specified in this Agreement, which conditions are intended to ensure compliance with the provisions of the Securities Act. A transferring Holder will cause any proposed purchaser, pledgee, or transferee of the Preferred Stock and the Registrable Securities held by such Holder to agree to take and hold such securities subject to the provisions and upon the conditions specified in this Agreement.

(b) Each certificate or instrument representing (i) the Preferred Stock, (ii) the Registrable Securities and (iii) any other securities issued in respect of the securities referenced in clauses (i) and (ii), upon any stock split, stock dividend, recapitalization, merger, consolidation, or similar event, shall (unless otherwise permitted by the provisions of Section 2.14(c)) bear a legend substantially in the following form:

THE SECURITIES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933 OR ANY STATE SECURITIES LAWS, AND HAVE BEEN ACQUIRED FOR INVESTMENT AND NOT WITH A VIEW TO, OR IN CONNECTION WITH, THE SALE OR DISTRIBUTION THEREOF. NO SUCH SALE OR DISTRIBUTION MAY BE EFFECTED WITHOUT AN EFFECTIVE REGISTRATION STATEMENT RELATED THERETO OR, IF REQUESTED BY THE COMPANY, AN OPINION OF COUNSEL IN A FORM SATISFACTORY TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED UNDER THE SECURITIES ACT OF 1933 OR APPLICABLE STATE SECURITIES LAWS.

THE SECURITIES REPRESENTED HEREBY MAY BE TRANSFERRED ONLY IN ACCORDANCE WITH THE TERMS OF AN INVESTORS' RIGHTS AGREEMENT BETWEEN THE COMPANY AND THE STOCKHOLDER, A COPY OF WHICH IS ON FILE WITH THE SECRETARY OF THE COMPANY.

The Holders consent to the Company making a notation in its records and giving instructions to any transfer agent of the Restricted Securities in order to implement the restrictions on transfer set forth in this Section 2.14.

(c) The holder of each certificate representing Restricted Securities, by acceptance thereof, agrees to comply in all respects with the provisions of this Section 2.14. Before any proposed sale, pledge, or transfer of any Restricted Securities, unless there is in effect a registration statement under the Securities Act covering the proposed transaction, the Holder thereof shall give notice to the Company of such Holder's intention to effect such sale, pledge, or transfer. Each such notice shall describe the manner and circumstances of the proposed sale, pledge, or transfer in sufficient detail and, if reasonably requested by the Company, shall be accompanied at such Holder's expense by either (i) a written opinion of legal counsel who shall, and whose legal opinion shall, be reasonably satisfactory to the Company, addressed to the Company, to the effect that the proposed transaction may be effected without registration under the Securities Act; (ii) a "no action" letter from the SEC to the effect that the proposed sale, pledge, or transfer of such Restricted Securities without registration will not result in a recommendation by the staff of the SEC that action be taken with respect thereto; or (iii) any

other evidence reasonably satisfactory to counsel to the Company to the effect that the proposed sale, pledge, or transfer of the Restricted Securities may be effected without registration under the Securities Act, whereupon the Holder of such Restricted Securities shall be entitled to sell, pledge, or transfer such Restricted Securities in accordance with the terms of the notice given by the Holder to the Company. The Company will not require such a legal opinion or "no action" letter (x) in any transaction in compliance with Rule 144 or (y) in any transaction in which such Holder distributes Restricted Securities to (A) an Affiliate of such Holder or (B) any Immediate Family Member of such Holder or any Family Trust of such Holder for no consideration; provided that each transferee agrees in writing to be subject to the terms of this Section 2.14. Each certificate or instrument evidencing the Restricted Securities transferred as above provided shall bear, except if such transfer is made pursuant to Rule 144, the appropriate restrictive legend set forth in Section 2.14(b), except that such certificate shall not bear such restrictive legend if, in the opinion of counsel for such Holder and the Company, such legend is not required in order to establish compliance with any provisions of the Securities Act.

(d) Each Holder agrees that the Preferred Stock and the Registrable Securities may not be sold, pledged, or otherwise transferred to any proposed purchaser, pledgee, or transferee reasonably determined by the Board to be a competitor of the Company, and the Company shall not recognize and shall issue stop-transfer instructions to its transfer agent with respect to any such sale, pledge, or transfer (provided that, for purposes of this Section 2.14(d), the Athyrium Stockholders shall be deemed not to be a competitor of the Company).

(e) None of the terms of this Agreement shall be construed to require the consent or approval of the Company or the Holders in order to effectuate the sale, pledge or other transfer of the Preferred Stock or the Registrable Securities by a Holder to an Affiliate of such Holder that otherwise complies with the provisions of Section 2.13(d) and this Section 2.14.

2.15 **Termination of Registration Rights**. No Holder shall be entitled to exercise any right provided for in this Section 2 after the earlier of (i) five years following the consummation of a Qualified IPO, (ii) such time as Rule 144 or another similar exemption under the Securities Act is available for the sale of all of such Holder's Registrable Securities without limitation during a three-month period without registration, or (iii) upon termination of this Agreement, as provided in Section 4.1.

3. Covenants of the Company.

3.1 **Delivery of Financial Statements**. The Company shall deliver to (i) each Holder of at least 10,000,000 shares of Registrable Securities (subject to adjustment for stock splits, stock dividends, reclassifications or the like), other than a Holder reasonably determined by the Board to be a competitor of the Company (provided that, for purposes of this Section 3.1(i), the Athyrium Stockholders shall be deemed not to be a competitor of the Company); and (ii) BCI, so long as it holds at least 5,000,000 shares of Registrable Securities (subject to adjustment for stock splits, stock dividends, reclassifications or the like) and has not been reasonably determined by the Board to be a competitor of the Company:

(a) as soon as available, but in any event within 120 days after the end of each fiscal year of the Company, (i) a consolidated balance sheet as of the end of such year

and (ii) consolidated statements of operations, stockholders' equity and cash flows for such year, all such financial statements audited and certified by independent public accountants of recognized standing selected by the Company;

(b) as soon as available, but in any event within 45 days after the end of each of the first three quarters of each fiscal year of the Company, unaudited consolidated statements of operations and cash flows for such fiscal quarter, and an unaudited consolidated balance sheet as of the end of such fiscal quarter, all prepared in accordance with GAAP (except that such financial statements may (i) be subject to normal year-end audit adjustments and (ii) not contain all notes thereto that may be required in accordance with GAAP); and

(c) as soon as available, but in any event not later than 45 days after the beginning of each fiscal year, a budget for such fiscal year, approved by the Board of Directors and prepared on a monthly basis.

Each such Holder agrees that any information obtained by such Holder pursuant to this Section 3.1, which is reasonably perceived to be proprietary to the Company or otherwise confidential, will not (i) be used, except in connection with monitoring its investment in the Company and (ii) be disclosed without the prior written consent of the Company (with any such consent to the disclosure to a prospective purchaser of Registrable Securities not to be unreasonably withheld, conditioned or delayed), unless such Holder can demonstrate that such confidential information (a) is known or becomes known to the public in general (other than as a result of a breach of this Section 3.1 by such Holder or its Affiliates), (b) is or has been independently developed or conceived by such Holder without use of the Company's confidential information, or (c) is or has been made known or disclosed to such Holder by a third party without a breach of any obligation of confidentiality such third party may have to the Company or other third party; provided, however, that any Holder may disclose confidential information (i) to its attorneys, accountants, advisors, consultants, and other professionals to the extent necessary to obtain their services in connection with monitoring its investment in the Company; (ii) to any Affiliate, partner (or prospective partner), member, stockholder, or wholly owned subsidiary of such Holder in the ordinary course of business, provided that, such Holder informs such Person that such information is confidential and such Person agrees to maintain the confidentiality of such information and to not use such information except as permitted in clause (i) above; or (iii) as may otherwise be required by law, including as requested in connection with an audit conducted by any regulatory authority, provided that, such Holder promptly notifies the Company of such disclosure and takes reasonable steps to minimize the extent of any such required disclosure; provided, further, that, except as approved in advance by the Board, each Holder acknowledges and agrees that it will not, and shall cause each of its directors, managers, officers, partners, employees, agents and members not to, during or after the term of this Agreement, disclose such confidential information to any other Person, including any portfolio company, that is directly competitive with the Company (it being acknowledged and agreed that a Person shall not be deemed competitive with the Company solely by reason of its ownership of a Person that may be competitive with the Company) for any reason or purpose whatsoever. In the event any Holder violates the foregoing agreement of confidentiality, without limitation to any other remedy the Company may have with respect to such breach, the covenants of the Company set forth in this Section 3 shall terminate as to such Holder and its Affiliates and such Holder and its Affiliates shall no longer have any rights to receive any financial statements or

other confidential information of the Company. Notwithstanding anything contained herein to the contrary, each Holder (x) shall be responsible and liable for any breach of this Agreement by any of the Persons to whom such Holder discloses confidential or proprietary information of the Company, whether or not such disclosure is permitted hereunder, and (y) agrees to take all reasonable measures (including, but not limited to, court proceedings) to restrain such Persons from prohibited disclosure or improper use of such confidential or proprietary information of the Company.

3.2 **Inspection**. The Company shall permit (i) each Founder (for so long as such Founder is an employee of the Company and holds any shares of Common Stock or securities exercisable for or convertible into Common Stock), (ii) each Investor that holds at least 10,000,000 shares of Registrable Securities (subject to adjustment for stock splits, stock dividends, reclassifications or the like), other than a Stockholder reasonably determined by the Board to be a competitor of the Company, and (iii) BCI, so long as it holds at least 5,000,000 shares of Registrable Securities (subject to adjustment for stock splits, stock dividends, reclassifications or the like) and has not been reasonably determined by the Board to be a competitor of the Company, at such Stockholder's expense, to visit and inspect the Company's properties, to examine its books of account and records and to discuss the Company's affairs, finances and accounts with its officers, all at such reasonable times as may be requested by such Stockholder; provided that, for purposes of this Section 3.2, the Athyrium Stockholders shall be deemed not to be a competitor of the Company; and provided further that, the Company shall not be obligated pursuant to this Section 3.2 to provide access to any information which (i) it reasonably considers to be a trade secret or similar confidential information (unless covered by an enforceable confidentiality agreement, in form acceptable to the Company) or (ii) the disclosure of which would adversely affect the attorney-client privilege between the Company and its counsel.

3.3 **Right of First Offer**. Subject to the terms and conditions specified in this Section 3.3, the Company hereby grants to each Stockholder a right of first offer with respect to future sales by the Company of its Shares (as hereinafter defined). A Stockholder who chooses to exercise the right of first offer may designate as purchasers under such right itself or its partners or Affiliates, including Affiliated Funds, or Family Trusts, in such proportions as it deems appropriate.

Each time the Company proposes to offer any shares of its capital stock or securities convertible into or exercisable for any shares of any class of its capital stock ("**Shares**"), the Company shall first make an offering of such Shares to each Stockholder in accordance with the following provisions:

(a) The Company shall deliver a notice in accordance with Section 4.5 ("**Notice**") to the Stockholders stating (i) its bona fide intention to offer such Shares, (ii) the number of such Shares to be offered, and (iii) the price and terms, if any, upon which it proposes to offer such Shares.

(b) Within 15 calendar days after delivery of the Notice, each Stockholder, by written notice to the Company, may elect to purchase or obtain, at the price and on the terms specified in the Notice, up to that portion of such Shares which equals the

proportion that the number of shares of Common Stock issued and held, or issuable upon conversion of all convertible securities then held, by such Stockholder bears to the total number of shares of Common Stock then outstanding (assuming full conversion of all convertible securities). Such purchase shall be completed at the same closing as that of any third party purchasers or at an additional closing thereunder, as determined by the Company, in is reasonable discretion. The Company shall promptly, in writing, inform each Stockholder that purchases all the shares available to it (each, a "**Fully-Exercising Investor**") of any other Stockholder's failure to do likewise. During the 10-day period commencing after receipt of such information, each Fully-Exercising Investor shall be entitled to elect to purchase or obtain, by written notice to the Company, that portion of the Shares for which Stockholders were entitled to subscribe but which were not subscribed for by the Stockholders that is equal to the proportion that the number of shares of Common Stock issued and held, or issuable upon conversion of all convertible securities then held, by such Fully-Exercising Investor bears to the total number of shares of Common Stock then outstanding (assuming full conversion of all convertible securities) and held by all Fully-Exercising Investors. Any Shares that remain unsubscribed for shall be re-offered to the Fully-Exercising Investors which elected to purchase their full allocation of unsubscribed Shares in the same manner until (i) all Shares have been subscribed for or (ii) no Fully-Exercising Investor elects to purchase any additional Shares.

(c) The Company may, during the 45-day period following the expiration of the period provided in Section 3.3(b) hereof, offer the remaining unsubscribed portion of the Shares, if any, to any Person or Persons at a price not less than, and upon terms no more favorable to the offeree than, those specified in the Notice. If the Company does not enter into an agreement for the sale of the Shares within such period, or if such agreement is not consummated within 60 days of the execution thereof, the right provided hereunder shall be deemed to be revived and such Shares shall not be offered unless first reoffered to the Stockholders in accordance herewith.

(d) The right of first offer in this Section 3.3 shall not be applicable to (i) the issuance of securities in connection with stock dividends, stock splits or similar transactions; (ii) the issuance or sale of Common Stock (or options therefor) to employees, consultants and directors of the Company, directly or pursuant to a stock option plan, restricted stock unit plan, restricted stock purchase plan or other stock plan approved by the Board; (iii) the issuance of securities (or options, restricted stock units or warrants therefor) to financial institutions, equipment lessors, brokers or similar Persons in connection with commercial credit arrangements, equipment financings, commercial property lease transactions or similar transactions; (iv) the issuance of securities pursuant to the conversion or exercise of convertible or exercisable securities outstanding as of the date of this Agreement, including without limitation, warrants (including the Warrant), notes, restricted stock units or options; (v) the issuance of securities in connection with bona fide acquisitions, mergers or similar transactions, the terms of which are approved by the Board; (vi) the issuance of Common Stock issuable upon conversion of the Preferred Stock; (vii) the issuance of Common Stock in a public offering prior to or in connection with which all outstanding shares of the Preferred Stock will be converted to Common Stock; (viii) the issuance of securities (or options, restricted stock units or warrants therefor) to any Person as a component of any business relationship with such Person involving a material marketing, distribution, product development, supply or technology licensing arrangement or any other arrangements involving corporate partners that are primarily for

purposes other than raising capital, the terms of which business relationship with such Person are approved by the Board; (ix) the issuance of securities with the affirmative vote of the holders of a majority of the then outstanding shares of each of: (A) the Series A Preferred Stock, voting as a separate class, and (B) Series A-1 Preferred Stock and Series B Preferred Stock, voting together as a separate class on an as converted to Common Stock basis; or (x) that, with unanimous approval of the Board, are not offered to any existing stockholder of the Company. In addition to the foregoing, the right of first offer in this Section 3.3 shall not be applicable with respect to any Stockholder and any subsequent securities issuance, if (i) at the time of such subsequent securities issuance, such Stockholder is not an "accredited investor," as that term is then defined in Rule 501(a) under the Securities Act, and (ii) such subsequent securities issuance is otherwise being offered only to accredited investors.

3.4 **Additional Covenants of the Company**.

(a) The Company hereby agrees that it will not, without approval of the Board, which approval must include the affirmative vote of a majority of the directors of the Company that the holders of the Preferred Stock are entitled to elect pursuant to the Certificate, in each case to the extent that the holders of the Preferred Stock have elected to exercise such right:

(i) increase, decrease or alter the share capital of the Company;

(ii) sell all or substantially all of the Company's assets;

(iii) acquire or dispose of real property;

(iv) modify the Company's bylaws;

(v) effect a (A) dissolution or liquidation of the Company, (B) merger of the Company with any other Person, or (C) reorganization of the Company;

(vi) create any subsidiary of the Company;

(vii) cause the Company to file a petition under any bankruptcy or insolvency laws or to effect an assignment for the benefit of the Company's creditors; or

(viii) change the principal business of the Company.

(b) The Company hereby further agrees that it will not, without approval of the Board, which approval shall include the affirmative vote of a majority of the directors (or the sole director, if only one) that the holders of the Series A-1 Preferred Stock and Series B Preferred Stock elect pursuant to the Certificate, in each case to the extent that the holders of Series A-1 Preferred Stock and Series B Preferred Stock have elected to exercise such right:

(i) declare any dividends on any class of the Company's capital stock in excess of two-thirds of the Company's net income in any calendar year;

(ii) increase the number of shares of Common Stock available for issuance pursuant to the Company's 2018 Equity Stock Plan, as amended, or any successor plan thereto, in excess of 10,850,000 shares (subject to adjustment for stock splits, stock dividends, reclassifications or the like); or

(iii) effect any issuances of any options, warrants or other equity securities to (A) Harry Stylli, (B) any Affiliate or Immediate Family Member of Harry Stylli, or (C) any other Person with respect to which Harry Stylli, or any Affiliate or Immediate Family Member of Harry Stylli, beneficially owns directly or indirectly, (1) in the aggregate more than 35% of the economic interests, or (2) the power to elect or appoint more than 35% of the members of the board of directors (or equivalent governing body).

3.5 **Termination of Covenants**.

(a) The covenants set forth in Sections 3.1, 3.2, 3.3 and 3.4(a) shall terminate as to each Stockholder and be of no further force or effect, at the earlier of: (i) immediately prior to the consummation of a Qualified IPO, (ii) upon termination of this Agreement, as provided in Section 4.1, and (iii) the Company first becoming subject to the periodic reporting requirements of Sections 13 or 15(d) of the Exchange Act.

(b) The covenants set forth in Section 3.4(b) shall terminate and be of no further force and effect as of any date when the Investors holding the Series A-1 Preferred Stock as of the date of this Agreement or their Affiliated Funds and the Investors holding the Series B Preferred Stock as of the date of this Agreement or their Affiliated Funds cease to own, in the aggregate, a majority of the outstanding shares of Series A-1 Preferred Stock and the Series B Preferred Stock entitled to appoint a director under Article IV(B)(5)(b)(ii) of the Certificate. For purposes of this Section 3.5, any holders of Series B Preferred Stock as a result of participating in the Series A-1 Exchange, shall be deemed a holder of Series B Preferred Stock as of the date of this Agreement, and will not be considered a holder of Series A-1 Preferred Stock as of the date of this Agreement.

(c) The covenants set forth in this Section 3 shall terminate and be of no further force and effect as of any date that a Founder is no longer employed by the Company or its Affiliates, with respect to such Founder.

4. Miscellaneous.

4.1 **Termination**. This Agreement shall terminate, and have no further force and effect, when the Company shall consummate a transaction or series of related transactions deemed to be a liquidation, dissolution or winding up of the Company pursuant to which a distribution is made in accordance the Certificate. Each Founder acknowledges and agrees that any rights such Founder has under this Agreement, in such capacity, shall terminate and be of no further force and effect upon any termination of such Founder's employment with the Company; provided that all obligations of such Founder hereunder shall continue.

4.2 **Entire Agreement**. This Agreement constitutes the entire agreement between and among the parties hereto pertaining to the subject matter hereof, and any and all other written or oral agreements relating to the subject matter hereof existing between or among

the parties hereto are expressly canceled and superseded. Upon the effectiveness of this Agreement, the Prior Agreement shall be deemed amended and restated and superseded and replaced in its entirety by this Agreement, and shall be of no further force or effect.

4.3 **Successors and Assigns**. Except as otherwise provided in this Agreement, the terms and conditions of this Agreement shall inure to the benefit of and be binding upon the respective permitted successors and assigns of the parties (including transferees of any of the Preferred Stock or any Common Stock issued upon conversion thereof). Notwithstanding the foregoing, no assignee shall have any rights hereunder, unless such transferee executes the Joinder, agreeing to be bound by all of the terms and provisions of this Agreement. Nothing in this Agreement, express or implied, is intended to confer upon any Person other than the parties hereto or their respective permitted successors and assigns any rights, remedies, obligations, or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement.

4.4 **Amendments and Waivers**. Any term of this Agreement may be amended or waived only with the written consent of the Company and the holders of a majority of the Registrable Securities then outstanding; provided that, any amendment that adversely and disproportionately affects the rights of the Investors holding shares of Series A-1 Preferred Stock or Series B Preferred Stock relative to the rights of the other parties hereto shall also require the written consent of the holders of a majority of the Series A-1 Preferred Stock or Series B Preferred Stock, then outstanding, voting as a separate class, as applicable; provided, however, that any amendment to or waiver of the application of Sections 3.2, 3.3, 3.4 and 3.5 shall also require the written consent of the holders of a majority of each of (a) the shares of Series A Preferred Stock then outstanding, voting as a separate class, and (b) the shares of Series A-1 Preferred Stock then outstanding and the shares of Series B Preferred Stock then outstanding, voting together as a class on an as converted to Common Stock basis. Notwithstanding the foregoing, this Agreement may be amended with only the written consent of the Company for the sole purpose of including additional purchasers of Preferred Stock as "Investors" and "Holders." Any amendment or waiver effected in accordance with this Section 4.4 shall be binding upon each party to this Agreement, whether or not such party has signed such amendment or waiver, each future holder of all such Registrable Securities, and the Company.

4.5 **Notices**. Unless otherwise provided, any notice required or permitted by this Agreement shall be in writing and shall be deemed effective upon delivery, when delivered personally or by overnight courier or sent by facsimile, or 48 hours after being deposited in the U.S. mail, as certified or registered mail, with postage prepaid, or by email (with a copy thereof promptly delivered by one other method specified herein) and addressed to the party to be notified at such party's address, fax number or email address as set forth on the signature page or on Exhibit A or Exhibit B hereto, if to the Company, with an email copy to legaldeptcontractnotices@progenity.com and a copy to Gibson, Dunn & Crutcher LLP, 3161 Michelson Drive, Suite 1200, Irvine, California 92612, Attention: Michelle Hodges, or as subsequently modified by written notice pursuant to this Section 4.5.

4.6 **Severability**. If one or more provisions of this Agreement are held to be unenforceable under applicable law, the parties agree to renegotiate such provision in good faith. In the event that the parties cannot reach a mutually agreeable and enforceable replacement for

such provision, then, to the maximum extent permitted by law, (a) such provision shall be excluded from this Agreement, (b) the balance of this Agreement shall be interpreted as if such provision were so excluded and (c) the balance of this Agreement shall be enforceable in accordance with its terms.

4.7 **Governing Law**. This Agreement and the rights and obligations of the parties hereunder shall be governed, construed and interpreted in accordance with the laws of the State of Delaware, without giving effect to principles of conflicts of law.

4.8 **Dispute Resolution**.

(a) Each of the parties irrevocably agrees that any legal action, suit or proceeding arising out of or relating to this Agreement brought by any party against any other party shall be brought and determined in the Court of Chancery of the State of Delaware, provided that if jurisdiction is not then available in the Court of Chancery of the State of Delaware, then any such legal action, suit or proceeding may be brought in any federal court located in the State of Delaware or any other Delaware state court. Each of the parties hereby irrevocably submits to the jurisdiction of the aforesaid courts for itself and with respect to its property, generally and unconditionally, with regard to any such action, suit or proceeding arising out of or relating to this Agreement. Each of the parties agrees not to commence any action, suit or proceeding relating thereto except in the courts described above in Delaware, other than actions, suits or proceedings in any court of competent jurisdiction to enforce any judgment, decree or award rendered by any such court in Delaware as described herein. Each of the parties further agrees that notice as provided herein shall constitute sufficient service of process in any such action, suit or proceeding and the parties further waive any argument that such service is insufficient. Each of the parties hereby irrevocably and unconditionally waives, and agrees not to assert, by way of motion or as a defense, counterclaim or otherwise, in any action, suit or proceeding arising out of or relating to this Agreement, (i) any claim that it is not personally subject to the jurisdiction of the courts in Delaware as described herein for any reason, (ii) that it or its property is exempt or immune from jurisdiction of any such court or from any legal process commenced in such courts (whether through service of notice, attachment prior to judgment, attachment in aid of execution of judgment, execution of judgment or otherwise) and (iii) that (A) the suit, action or proceeding in any such court is brought in an inconvenient forum, (B) the venue of such suit, action or proceeding is improper or (C) this Agreement, or the subject matter hereof, may not be enforced in or by such courts.

(b) Notwithstanding the foregoing, if any legal action, suit or proceeding arising out of or relating to this Agreement arises at the same time and relates to the same or similar facts, claims or events as any legal action, suit or proceeding arising out of or relating to (i) that certain Fourth Amended and Restated Voting Agreement, dated as of the date hereof, between the Company and the stockholders of the Company party thereto, as amended from time to time, or (ii) that certain Fourth Amended and Restated Co-Sale Agreement, dated as of the date hereof, among the Company and the stockholders of the Company party thereto, to the extent sought by any party thereto, including the Company, such legal action, suit or proceeding shall, to the extent practicable, be combined in one legal action, suit or proceeding.

(c) EACH PARTY HEREBY WAIVES ITS RIGHTS TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION ARISING OUT OF OR RELATING TO THIS AGREEMENT. THE SCOPE OF THIS WAIVER IS INTENDED TO BE ALL-ENCOMPASSING OF ANY AND ALL DISPUTES THAT MAY BE FILED IN ANY COURT AND THAT ARISE OUT OF OR RELATE TO THIS AGREEMENT, INCLUDING, WITHOUT LIMITATION, CONTRACT CLAIMS, TORT CLAIMS (INCLUDING NEGLIGENCE), BREACH OF DUTY CLAIMS, AND ALL OTHER COMMON LAW AND STATUTORY CLAIMS. THIS SECTION HAS BEEN FULLY DISCUSSED BY EACH OF THE PARTIES HERETO AND THESE PROVISIONS WILL NOT BE SUBJECT TO ANY EXCEPTIONS. EACH PARTY HERETO HEREBY FURTHER WARRANTS AND REPRESENTS THAT SUCH PARTY HAS REVIEWED THIS WAIVER WITH ITS LEGAL COUNSEL, AND THAT SUCH PARTY KNOWINGLY AND VOLUNTARILY WAIVES ITS JURY TRIAL RIGHTS FOLLOWING CONSULTATION WITH LEGAL COUNSEL.

4.9 **Counterparts**. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original and all of which together shall constitute one and the same instrument. Counterparts may be delivered via facsimile, electronic mail (including pdf) or other transmission method and any counterpart so delivered shall be deemed to have been duly and validly delivered and be valid and effective for all purposes.

4.10 **Titles and Subtitles**. The titles and subtitles used in this Agreement are used for convenience only and are not to be considered in construing or interpreting this Agreement.

4.11 **Aggregation of Stock**. All shares of the Preferred Stock held by Affiliates shall be aggregated together for the purpose of determining the availability of any rights under this Agreement.

[Signature Pages Follow]

The parties have executed this Fourth Amended and Restated Investors' Rights Agreement as of the date first above written.

COMPANY:

PROGENITY, INC.

By: /s/ Eric d'Esparbes
Name: Eric d'Esparbes
Title: Chief Financial Officer

Address:
4330 La Jolla Village Drive
Suite 200
San Diego, CA 92122

The parties have executed this Fourth Amended and Restated Investors' Rights Agreement as of the date first above written.

INVESTOR/FOUNDER:

/s/ Harry Stylli
Harry Stylli

The parties have executed this Fourth Amended and Restated Investors' Rights Agreement as of the date first above written.

INVESTOR:

ATHYRIUM OPPORTUNITIES FUND (A) LP, a Delaware limited partnership

By: ATHYRIUM OPPORTUNITIES ASSOCIATES LP, its General Partner

By: ATHYRIUM OPPORTUNITIES ASSOCIATES GP LLC, the General Partner of Athyrium Opportunities Associates LP

By: /s/ Andrew C. Hyman
Name: Andrew C. Hyman
Title: Authorized Signatory

INVESTOR:

ATHYRIUM OPPORTUNITIES FUND (B) LP, a Delaware limited partnership

By: ATHYRIUM OPPORTUNITIES ASSOCIATES LP, its General Partner

By: ATHYRIUM OPPORTUNITIES ASSOCIATES GP LLC, the General Partner of Athyrium Opportunities Associates LP

By: /s/ Andrew C. Hyman
Name: Andrew C. Hyman
Title: Authorized Signatory

INVESTOR:

ATHYRIUM OPPORTUNITIES III CO-INVEST 1 LP

By: ATHYRIUM OPPORTUNITIES ASSOCIATES CO-INVEST LLC, its General Partner

By: /s/ Andrew C. Hyman
Name: Andrew C. Hyman
Title: Authorized Signatory

INVESTOR:

ATHYRIUM OPPORTUNITIES III ACQUISITION LP, a Delaware limited partnership

By: ATHYRIUM OPPORTUNITIES ASSOCIATES III LP, its General Partner

By: ATHYRIUM OPPORTUNITIES ASSOCIATES III GP LLC, its General Partner

By: /s/ Andrew C. Hyman
Name: Andrew C. Hyman
Title: Authorized Signatory

The parties have executed this Fourth Amended and Restated Investors' Rights Agreement as of the date first above written.

FOUNDER:

/s/ Chris Lowe
Chris Lowe

The parties have executed this Fourth Amended and Restated Investors' Rights Agreement as of the date first above written.

FOUNDER:

/s/ Howard Slutsky
Howard Slutsky

EXHIBIT A
INVESTORS

Name/Address/Email/Fax No.	No. of Preferred Shares	No. of Common Shares
Harry Stylli 2452 Paseo Dorado La Jolla, CA 92037	4,120,000 shares of Series A Preferred Stock	4,733,767
Athyrium Opportunities Fund (A) LP c/o Athyrium Capital Management, LP 505 Fifth Avenue, Floor 18 New York, NY 10017 Attention: Andrew C. Hyman and Sam Helfaer With copies to: Neuberger Berman 1290 Avenue of the Americas, 42nd Floor New York, NY 10104 Attn: Samuel Porat and Moore & Van Allen PLLC 100 North Tryon Street, Suite 4700 Charlotte, NC 28202 Attention: Tripp Monroe Fax: 704-378-1942	19,137,693 shares of Series B Preferred Stock	0

Athyrium Opportunities Fund (B) LP c/o Athyrium Capital Management, LP 505 Fifth Avenue, Floor 18 New York, NY 10017 Attention: Andrew C. Hyman and Sam Helfaer With copies to: Neuberger Berman 1290 Avenue of the Americas, 42nd Floor New York, NY 10104 Attn: Samuel Porat and Moore & Van Allen PLLC 100 North Tryon Street, Suite 4700 Charlotte, NC 28202 Attention: Tripp Monroe Fax: 704-378-1942	10,582,508 shares of Series B Preferred Stock	0
ATHYRIUM OPPORTUNITIES III CO-INVEST 1 LP c/o Athyrium Capital Management, LP 505 Fifth Avenue, Floor 18 New York, NY 10017 Attention: Andrew C. Hyman and Sam Helfaer With a copy to: Moore & Van Allen PLLC 100 North Tryon Street, Suite 4700 Charlotte, NC 28202 Attention: Tripp Monroe Fax: 704-378-1942	18,181,818 shares of Series B Preferred Stock	0
Beaver Creek Intermediate Fund, Ltd. c/o Savitr Capital 600 Montgomery Street, 47th floor San Francisco, CA 94111	2,641,793 shares of Series B Preferred Stock	4,472,605
MAK Capital Management, LLC 4643 Owls Wood Lane Durham, NC 27705	2,641,793 shares of Series B Preferred Stock	0

The Moses Trust c/o Savitr Capital 1 Market Plaza, Steuart Tower, Suite 1400 San Francisco, CA 94105	660,454 shares of Series B Preferred Stock	0
ATHYRIUM OPPORTUNITIES III ACQUISITION LP c/o Athyrium Capital Management, LP 505 Fifth Avenue, Floor 18 New York, NY 10017 Attention: Andrew C. Hyman and Sam Helfaer With a copy to: Moore & Van Allen PLLC 100 North Tryon Street, Suite 4700 Charlotte, NC 28202 Attention: Tripp Monroe Fax: 704-378-1942	9,090,910 shares of Series B Preferred Stock	
TOTAL	**67,056,969**	**9,206,372**

EXHIBIT B

FOUNDERS

Name/Address/Email/Fax No.	No. of Shares of Common Stock / Options to Purchase Shares of Common Stock/Restricted Stock Units
Harry Stylli 2452 Paseo Dorado La Jolla, CA 92037 Fax: 858-459-1441	4,733,767/none/none
Alan Mack 3470 Riverside Drive Saugatuck, MI 49453	2,625,000/none/none
Howard Slutsky c/o Progenity, Inc. 4330 La Jolla Village Drive Suite 200 San Diego, CA 92122	6,583,485/1,185,000/20,000
Chris Lowe c/o Progenity, Inc. 4330 La Jolla Village Drive Suite 200 San Diego, CA 92122	3,082,903/1,710,000/20,000

EXHIBIT C

FORM OF JOINDER TO
INVESTORS' RIGHTS AGREEMENT

This JOINDER (this "**Joinder**") to the Fourth Amended and Restated Investors' Rights Agreement, dated as of August 27, 2019 (as amended from time-to-time, the "**Agreement**"), by and among Progenity, Inc., a Delaware corporation (the "**Company**"), and the Stockholders listed therein, is made and entered into by the undersigned ("**Assignee**") as of the date set forth below. Capitalized terms used herein but not otherwise defined shall have the meanings set forth in the Agreement.

WHEREAS, Assignee is the assignee of certain rights set forth on Exhibit A hereto (the "**Assigned Interests**") of the assignor set forth on such exhibit ("**Assignor**") under the Agreement;

WHEREAS, to the extent set forth in the Agreement, Assignee desires to assume the rights and obligations of Assignor under the Agreement with respect to the Assigned Interests; and

WHEREAS, the Agreement provides that an assignee of rights under the Agreement must execute this Joinder in order to be assigned rights pursuant to the Agreement.

NOW, THEREFORE, in consideration of the covenants contained in the Agreement and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignee hereby agree as follows:

1. Agreement to be Bound. Assignee has received a copy of the Agreement and has read and understands the Agreement. By executing this Joinder, Assignee shall become a party to the Agreement, and be subject to and bound by all of the terms and conditions of the Agreement.

2. Successors and Assigns. This Joinder and the terms and conditions of the Agreement shall be binding upon, shall inure to the benefit of and shall be enforceable by the Company, the other Stockholders and each of their heirs, beneficiaries, successors in interest and assigns.

3. Third Party Beneficiaries. Each of the Company and each of the other Stockholders shall be a third party beneficiary hereof.

4. Governing Law. This Joinder and the rights and obligations of the parties hereunder shall be governed, construed and interpreted in accordance with the laws of the State of Delaware, without giving effect to principles of conflicts of law.

* * * * *

IN WITNESS WHEREOF, the undersigned has executed this Joinder to the Agreement as of the date set forth below.

[ASSIGNEE]

By: _____

Name:
Title (for entities):

Address: _____

_____

_____

Date: _____

Exhibit A to Joinder

Assignor and Assigned Interests

Assignor:

Assigned Interests:

Effective Date of Assignment:

Exhibit 10.2

2011 Stock INCENTIVE PLAN

Ascendant MDx, INC.
2011 INCENTIVE STOCK PLAN

1. Purpose of the Plan. The purposes of this Incentive Stock Plan are to attract and retain the best available personnel, to provide additional incentive to the employees of Ascendant MDx, Inc. (the "Company") and to promote the success of the Company's business. Options granted hereunder may be either Incentive Stock Options or Nonstatutory Stock Options, at the discretion of the Board and as reflected in the terms of the written option agreement. The Board also has the discretion to grant Restricted Stock awards, Restricted Stock Unit awards and Stock Bonus awards.

2. Definitions.

(a) "Award" shall mean any right granted under the Plan, including an Option, a Restricted Stock award, Restricted Stock Unit award, and a Stock Bonus award.

(b) "Award Agreement" shall mean any written or electronic agreement, contract, or other instrument or document evidencing an Award.

(c) "Board" shall mean the Committee, if one has been appointed, or the Board of Directors of the Company, if no Committee is appointed.

(d) "Change in Control" has the meaning set forth in Section 15(c) of the Plan.

(e) "Code" shall mean the Internal Revenue Code of 1986, as amended.

(f) "Committee" shall mean the Committee appointed by the Board in accordance with Section 4(a) of the Plan, if one is appointed.

(g) "Common Stock" shall mean the common stock of the Company, par value $.001 per share.

(h) "Company" shall mean Ascendant MDx, Inc.

(i) "Consultant" shall mean any natural person who is engaged by the Company or any Parent or Subsidiary to render bona fide consulting services and is compensated for such consulting services, and any Director whether compensated for such services or not.

(j) "Continuous Status as an Employee or Consultant" shall mean the absence of any interruption or termination of service as an Employee or Consultant, as applicable. Continuous Status as an Employee or Consultant shall not be considered interrupted in the case of sick leave, military leave, or any other leave of absence approved by the Board; provided, that such leave is for a period of not more than ninety (90) days or reemployment upon the expiration of such leave is guaranteed by contract or statute.

(k) "Director" means a member of the Board of Directors of the Company.

(l) "Disability" means total and permanent disability (as defined in Section 22(e)(3) of the Code).

(m) "Employee" shall mean any persons, including officers and directors, employed by the Company or any Parent or Subsidiary of the Company. The payment of a director's fee by the Company shall not be sufficient to constitute "employment" by the Company.

(n) "Holder" shall mean a person who has been granted or awarded an Award pursuant to the Plan.

(o) "Incentive Stock Award" shall mean an Award intended to qualify as an incentive stock award within the meaning of Section 422 of the Code.

(p) "Nonstatutory Stock Award" shall mean an award not intended to qualify as an Incentive Stock Option.

(q) "Option" shall mean a stock option granted pursuant to the Plan. An Option may be either an Incentive Stock Option or a Nonstatutory Stock Option.

(r) "Award Agreement" shall mean any written or electronic agreement, contract, or other instrument or document evidencing an Award.

(s) "Optioned Stock" shall mean the Common Stock subject to an Option.

(t) "Optionee" shall mean an Employee or Consultant who receives an Option.

(u) "Outside Director" means a Director who is not an Employee.

(v) "Parent" shall mean a "parent corporation," whether now or hereafter existing, as defined in Section 424(e) of the Code.

(w) "Performance Award" shall mean an Award that vests based upon the achievement of performance goals related to one or more Performance Criteria.

(x) "Performance Criteria" shall mean the following business criteria with respect to the Company, any Subsidiary or any division or operating unit: (a) net income, (b) pre-tax income, (c) operating income, (d) cash flow, (e) earnings per share, (f) return on equity, (g) return on invested capital or assets, (h) cost reductions or savings, (i) funds from operations, (j) appreciation in the fair market value of Common Stock, and (k) earnings before any one or more of the following items: interest, taxes, depreciation or amortization; each as determined in accordance with generally accepted accounting principles or subject to such adjustments as may be specified by the Board.

(y) "Plan" shall mean this 2011 Incentive Stock Plan, as amended.

(z) "Restricted Stock" shall mean a right to purchase Common Stock pursuant to Section 11 of the Plan.

(aa) "Restricted Stock Unit" shall mean a right to receive a specified number of shares of Common Stock during specified time periods pursuant to Section 12 of the Plan.

(bb) "Retirement" has the meaning set forth in Section 9(d) of the Plan.

(cc) "Section 162(m) Participant" shall mean any key Employee designated by the Board as a key Employee whose compensation for the fiscal year in which the key Employee is so designated or a future fiscal year may be subject to the limit on deductible compensation imposed by Section-162(m) of the Code.

(dd) "Share" shall mean a share of the Common Stock, as adjusted in accordance with Section 15 of the Plan.

(ee) "Stock Bonus" shall mean the right to receive a bonus of Common Stock for past services pursuant to Section 13 of the Plan.

(ff) "Subsidiary" shall mean a "subsidiary corporation," whether now or hereafter existing, as defined in Section 424(f) of the Code.

3. Stock Subject to the Plan.

(a) Subject to the provisions of Section 15 of the Plan, the maximum aggregate number of shares available for issuance under the Plan is one million two hundred fifty thousand (1,250,000) shares of Common Stock. The Shares may be authorized but unissued or reacquired Common Stock. If an Award should expire or become unexercisable for any reason without having been exercised in full, then the unpurchased Shares which were subject thereto shall, unless the Plan shall have been terminated, become available for future grant or sale under the Plan. Notwithstanding any other provision of the Plan, shares issued under the Plan and later repurchased by the Company shall not become available for future grant or sale under the Plan.

(b) The following limitations shall apply to grants of Awards to Employees:

(i) No Employee shall be granted, in any fiscal year of the Company, pursuant to which more than an aggregate of two hundred and fifty thousand (250,000) Shares are issuable to such Employee, unless otherwise approved by the Board of Directors.

(ii) In connection with his or her initial employment, an Employee may be granted Awards to purchase and/or receive additional Shares as determined by the Board of Directors which shall not count against the limit set forth in subsection (i) above.

(iii) The foregoing limitations shall be adjusted proportionately in connection with any change in the Company's capitalization as described in Section 15.

(iv) If an Award is canceled in the same fiscal year of the Company in which it was granted (other than in connection with a transaction described in Section 15), the canceled Award shall be counted against the limit set forth in subsection (i) above.

(c) Shares Available. Subject to adjustment as provided in Section 15, the aggregate number of shares of Common Stock with respect to which awards of Restricted Stock, Restricted Stock Units, Stock Bonuses or a combination thereof shall be made under this Plan shall not exceed one hundred percent (100%) of the aggregate number of shares of Common Stock available under this Plan, as set forth in Section 3(a).

(d) Limited Exception to Minimum Vesting Restrictions. Up to seventy five percent (75%) of the total number of shares of Common Stock available for issuance under the Plan pursuant to Section 3(a) may in the aggregate be issued as awards of Restricted Stock, Restricted Stock Units, Stock Bonuses or a combination thereof that are not subject to the minimum vesting requirements set forth in Sections 11(d), 12(b) and 13(d) of the Plan.

4. Administration of the Plan.

(a) Procedure.

(i) Multiple Administrative Bodies. The Plan may be administered by different Committees with respect to different groups of Employees and Consultants.

(ii) Section 162(m). To the extent that the Board determines it to be desirable to qualify Awards granted hereunder as "performance-based compensation" within the meaning of Section 162(m) of the Code, the Plan shall be administered by a Committee of two or more directors within the meaning of Section 162(m) of the Code.

(iii) Rule 16b-3. To the extent desirable to qualify transactions hereunder as exempt under Rule 16b-3, the transactions contemplated hereunder shall be structured to satisfy the requirements for exemption under Rule 16b-3.

(iv) Other Administration. Other than as provided above, the Plan shall be administered by (A) the Board or a Committee, which committee shall be constituted to satisfy applicable laws.

(b) Powers of the Board. Subject to the provisions of the Plan, the Board shall have the authority, in its discretion: (i) to grant Incentive Stock Options, Nonstatutory Stock Options, Restricted Stock awards, Restricted Stock Unit awards, or Stock Bonus awards; (ii) to determine, upon review of relevant information and in accordance with Section 7 of the Plan, the fair market value of the Common Stock; (iii) to determine the exercise price per share of each Award to be granted, if any, which exercise price shall be determined in accordance with Section 7 of the Plan; (iv) to determine the Employees or Consultants to whom, and the time or times at which, Awards shall be granted and, subject to the limitations of Section 3 above, the number of shares to be represented by each Award; (v) to interpret the Plan; (vi) to prescribe, amend and rescind rules and regulations relating to the Plan; (vii) to determine the terms and provisions of each Award granted (which need not be identical) and, with the consent of the holder thereof, modify or amend any provisions (including provisions relating to exercise price) of any Award; (viii) to accelerate or defer (with the consent of the Awardee) the exercise date of any Option, consistent with the provisions of Section 6 of the Plan; (ix) to authorize any person to execute on behalf of the Company any instrument required to effectuate the grant of an Award previously granted by the Board; (x) to allow Awardees to satisfy withholding tax obligations by electing to have the Company withhold from the Shares to be issued upon exercise of an Award that number of Shares having a fair market value equal to the statutory minimum amount required to be withheld (the fair market value of the Shares to be withheld shall be determined on the date that the amount of tax to be withheld is to be determined; and, all elections by an Award holder to have Shares withheld for this purpose shall be made in such form and under such conditions as the Board may deem necessary or advisable); and (xi) to make all other determinations deemed necessary or advisable for the administration of the Plan. Except to the extent prohibited by Sections 11(d), 12(b) and 13(d) of the Plan, the Board shall have the power to accelerate the time at which an Award may first be exercised or the time during which an Award or any part thereof will vest in accordance with the Plan, notwithstanding the provisions in the Award stating the time at which it may first be exercised or the time during which it will vest.

(c) Effect of Board's Decision. All decisions, determinations and interpretations of the Board shall be final and binding on all Holders of any Awards granted under the Plan.

(d) Provisions Applicable to Section 162(m) Participants.

(i) The Board, in its discretion, may determine whether an Award is to qualify as performance-based compensation as described in Section 162(m)(4)(C) of the Code.

(ii) Notwithstanding anything in the Plan to the contrary, the Board may grant any Award to a Section 162(m) Participant, including a Restricted Stock award, Restricted Stock Unit award, or Stock Bonus award the restrictions with respect to which lapse upon the attainment of performance goals which are related to one or more of the Performance Criteria.

(iii) To the extent necessary to comply with the performance-based compensation requirements of Section 162(m)(4)(C) of the Code, with respect to any Restricted Stock award, Restricted Stock Unit award, or Stock Bonus award granted under the Plan to one or more Section 162(m) Participants, no later than ninety (90) days following the commencement of any fiscal year in question or any other designated fiscal period or period of service (or such other time as may be required or permitted by Section 162(m) of the Code), the Board shall, in writing, (i) designate one or more Section 162(m) Participants, (ii) select the Performance Criteria applicable to the fiscal year or other designated fiscal period or period of service, (iii) establish the various performance targets, in terms of an objective formula or standard, and amounts of such Restricted Stock awards, Restricted Stock Unit awards, and Stock Bonus awards, as applicable, which may be earned for such fiscal year or other designated fiscal period or period of service, and (iv) specify the relationship between Performance Criteria and the performance targets and the amounts of such Restricted Stock awards, Restricted Stock Unit awards, and Stock Bonus awards, as applicable, to be earned by each Section 162(m) Participant for such fiscal year or other designated fiscal period or period of service. Following the completion of each fiscal year or other designated fiscal period or period of service, the Board shall certify in writing whether the applicable performance targets have been achieved for such fiscal year or other designated fiscal period or period of service. In determining the amount earned by a Section 162(m) Participant, the Board shall have the right to reduce (but not to increase) the amount payable at a given level of performance to take into account additional factors that the Board may deem relevant to the assessment of individual or corporate performance for the fiscal year or other designated fiscal period or period of service.

(iv) Furthermore, notwithstanding any other provision of the Plan, any Award which is granted to a Section 162(m) Participant and is intended to qualify as performance-based compensation as described in Section 162(m)(4)(C) of the Code shall be subject to any additional limitations set forth in Section 162(m) of the Code (including any amendment to Section 162(m) of the Code) or any regulations or rulings issued thereunder that are requirements for qualification as performance-based compensation as described in Section 162(m)(4)(C) of the Code, and the Plan shall be deemed amended to the extent necessary to conform to such requirements.

5. Eligibility.

(a) Awards may be granted to Employees and Consultants provided, that Incentive Stock Options may only be granted to Employees. An Employee or Consultant, who has been granted an Award

may, if such Employee or Consultant is otherwise eligible, is granted additional Awards. Each Outside Director shall be eligible to be automatically granted Options at the times and in the manner set forth in Section 10.

(b) Each Option shall be designated in the written Award Agreement as either an Incentive Stock Option or a Nonstatutory Stock Option. However, notwithstanding such designation, to the extent that the aggregate fair market value of the Shares with respect to which Options designated as Incentive Stock Options are exercisable for the first time by any Optionee during any calendar year (under all plans of the Company) exceeds one hundred thousand dollars ($100,000), such Options shall be treated as Nonstatutory Stock Options.

(c) For purposes of Section 5(b), Options shall be taken into account in the order in which they were granted, and the fair market value of the Shares shall be determined as of the time the Option with respect to such Shares is granted.

(d) The Plan shall not confer upon any Holder any right with respect to continuation of employment by or the rendition of consulting services to the Company, nor shall it interfere in any way with his or her right or the Company's right to terminate his or her employment or services at any time, with or without cause.

6. Term of Plan. The Plan shall become effective upon the earlier to occur of its adoption by the Board or its approval by vote of holders of a majority of the outstanding shares of the Company entitled to vote on the adoption of the Plan. It shall continue in effect until terminated under Section 17 of the Plan. Notwithstanding the foregoing, no Incentive Stock Option may be granted under this Plan after the first to occur of (a) the expiration of ten (10) years from the date the Plan is adopted by the Board or (b) the expiration of ten (10) years from the date the Plan is approved by the Company's stockholders under Section 21.

7. Exercise Price and Consideration.

(a) The per Share exercise price for the Shares to be issued pursuant to exercise of an Option shall be no less than one hundred percent (100%) of the fair market value per Share on the date of grant; provided, however, that in the case of an Incentive Stock Option granted to an Employee who, at the time of grant of such Incentive Stock Option, owns stock representing more than ten percent (10%) of the voting power of all classes of stock of the Company or any Parent or Subsidiary, the per Share exercise price shall be no less than one hundred and ten percent (110%) of the fair market value per Share on the date of grant. Notwithstanding the foregoing, Options may be granted with a per Share exercise price of less than one hundred percent (100%) of the fair market value per Share on the date of grant pursuant to a merger or other corporate transaction.

(b) The fair market value shall be determined by the Board in its discretion; provided, however, that where there is a public market for the Common Stock, the fair market value per Share shall be the closing price per share (or the closing bid, if no sales were reported) of the Common Stock for the date of grant, as reported in the Wall Street Journal (or, if not so reported, as otherwise reported by the NASDAQ Stock Market) or, in the event the Common Stock is listed on another stock exchange, the fair market value per Share shall be the closing price per share (or the closing bid,

if no sales were reported) on such exchange on the date of grant, as reported in the Wall Street Journal (or if not so reported, as otherwise reported by such exchange).

(c) The consideration to be paid for the Shares to be issued upon exercise of an Award, including the method of payment, shall be determined by the Board (and in the case of an Incentive Stock Option, shall be determined at the time of grant) and to the extent permitted under applicable laws may consist entirely of cash, check, other Shares of Common Stock which (i) either have been owned by the Optionee for more than six (6) months on the date of surrender or were not acquired directly or indirectly, from the Company, and (ii) have a fair market value on the date of surrender equal to the aggregate exercise price of the Shares as to which said Award shall be exercised, or any combination of such methods of payment, or such other consideration and method of payment for the issuance of Shares to the extent permitted under applicable law.

8. Term of Option. The term of each Option shall be the term stated in the Option Agreement; provided, however, that the term shall be no more than seven (7) years from the date of grant thereof. In the case of an Incentive Stock Option granted to an Optionee who, at the time the Option is granted, owns stock representing more than ten percent (10%) of the voting power of all classes of stock of the Company or any Parent or Subsidiary, the term of the Option shall be five (5) years from the date of grant thereof or such shorter term as may be provided in the Option Agreement.

9. Exercise of Option.

(a) Procedure for Exercise; Rights as a Stockholder.

(i) Any Option granted hereunder shall be exercisable at such times and under such conditions as determined by the Board, including performance criteria with respect to the Company and/or the Optionee, and as shall be permissible under the terms of the Plan.

(ii) An Option may not be exercised for a fraction of a Share.

(iii) An Option shall be deemed to be exercised when written notice of such exercise has been given to the Company in accordance with the terms of the Option by the person entitled to exercise the Option and full payment for the Shares with respect to which the Option is exercised has been received by the Company. Full payment may, as authorized by the Board, consist of any consideration and method of payment allowable under Section 7 of the Plan. Until the issuance (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company) of the stock certificate evidencing such Shares, no right to vote or receive dividends or any other rights as a stockholder shall exist with respect to the Optioned Stock, notwithstanding the exercise of the Option. Upon an Optionee's request, the Company shall issue (or cause to be issued) such stock certificate promptly upon exercise of the Option. To the extent an Option designated as an Incentive Stock Option at grant that is treated as the exercise of a Nonstatutory Stock Option pursuant to Section 5(b), the Company shall issue a separate stock certificate evidencing the Shares treated as acquired upon exercise of an Incentive Stock Option and a separate stock certificate evidencing the Shares treated as acquired upon exercise of a Nonstatutory Stock Option and shall identify each such certificate accordingly in its stock transfer

records. No adjustment will be made for a dividend or other right for which the record date is prior to the date the stock certificate is issued, except as provided in Section 15 of the Plan.

(iv) Exercise of an Option in any manner shall result in a decrease in the number of Shares which thereafter may be available, both for purposes of the Plan and for sale under the Option, by the number of Shares as to which the Option is exercised.

(b) Termination of Status as an Employee or Consultant. In the event of termination of an Optionee's Continuous Status as an Employee or Consultant (as the case may be), such Optionee may, but only within such period of time as is determined by the Board, with such determination in the case of an Incentive Stock Option not exceeding three (3)months and in the case of Nonstatutory Stock Option not exceeding six (6) months after the date of termination (provided, that such period shall be three (3) months in the case of an Option granted to an Outside Director pursuant to Section 10), with such determination in the case of an Incentive Stock Option being made at the time of grant of the Option, exercise the Option to the extent that such Employee or Consultant was entitled to exercise it at the date of such termination (but in no event later than the date of expiration of the term of such Option as set forth in the Option Agreement). To the extent that such Employee or Consultant was not entitled to exercise the Option at the date of such termination, or if such Employee or Consultant does not exercise such Option (which such Employee or Consultant was entitled to exercise) within the time specified herein, the Option shall terminate.

(c) Disability of Optionee. Notwithstanding the provisions of Section 9(b) above, in the event of termination of an Optionee's Continuous Status as an Employee or Consultant as a result of such Employee's or Consultant's Disability, such Employee or Consultant may, but only within six (6) months (twelve (12) months in the case of an Option granted to an Outside Director pursuant to Section 10) (or such other period of time not exceeding twelve (12) months as is determined by the Board, with such determination in the case of an Incentive Stock Option being made at the time of grant of the Option) from the date of such termination (but in no event later than the date of expiration of the term of such Option as set forth in the Option Agreement), exercise the Option to the extent the right to exercise would have accrued had the Optionee continued Continuous Status as an Employee or Consultant for a period of six (6) months following termination of Continuous Status as an Employee or Consultant by reason of Disability. To the extent that such Employee or Consultant was not entitled to exercise an Option in this period, or if such Employee or Consultant does not exercise such Option (which such Employee or Consultant was entitled to exercise) within the time specified herein, the Option shall terminate.

(d) Retirement of Employee. Notwithstanding the provisions of Section 9(b) above, in the event of termination of an Employee's Continuous Status as an Employee as a result of such Employee's retirement from the Company at age fifty-five (55) or greater after having Continuous Status as an Employee for (5) years or more ("Retirement"), all Awards held by such Employee shall vest and such Employee may, but only within three (3) years from the date of such termination (but in no event later than the date of expiration of the term of such Award), exercise the Award to the extent such Employee was entitled to exercise it at the date of such termination.

(e) Death of Optionee. In the event of the death of an Optionee:

(i) during the term of the Option who is at the time of his or her death an Employee or Consultant of the Company and who shall have been in Continuous Status as an Employee or Consultant since the date of grant of the Option, the Option may be exercised, at any time within six (6) months (twelve (12) months in the case of an Option granted to an Outside Director pursuant to Section 10) (or at such later time as may be determined by the Board but in no event later than the date of expiration of the term of such Option as set forth in the Option Agreement), by the Optionee's estate or by a person who acquired the right to exercise the Option by bequest or inheritance, but only to the extent that the right to exercise would have accrued had the Optionee continued living and remained in Continuous Status as an Employee or Consultant six (6) months (or such other period of time as is determined by the Board) after the date of death; or

(ii) within thirty (30) days (or such other period of time not exceeding three (3) months as is determined by the Board, with such determination in the case of an Incentive Stock Option being made at the time of grant of the Option) after the termination of Continuous Status as an Employee or Consultant, the Option may be exercised, at any time within six (6) months (twelve (12) months in the case of an Option granted to an Outside Director pursuant to Section 10) (or such other period of time as is determined by the Board at the time of grant of the Option) following the date of death (but in no event later than the date of expiration of the term of such Option as set forth in the Option Agreement), by the Optionee's estate or by a person who acquired the right to exercise the Option by bequest or inheritance, but only to the extent that the right to exercise that had accrued at the date of termination.

10. Automatic Granting of Options to Outside Directors.

(a) First Option Grants. Unless otherwise determined by the Board, each new Outside Director shall be automatically granted an Option to purchase ten thousand (10,000) Shares (a "First Option") on the date on which such person first becomes a Director, whether through election by the stockholders of the Company or appointment by the Board to fill a vacancy.

(b) Subsequent Option Grants. Unless otherwise determined by the Board, each Outside Director and the Chairman of the Board of Directors of the Company shall be automatically granted an annual Option (a "Subsequent Option") to purchase, in the case of an Outside Director, five thousand (5,000) Shares.

(c) Terms of Options Granted to Outside Directors. Options granted to Outside Directors pursuant to this Section 10 shall have a per Share exercise price of no less than one hundred percent (100%) of the fair market value per Share on the date of grant. Subject to Section 9, the term of each Option granted to an Outside Director pursuant to this Section 10 shall be seven (7) years from the date of grant thereof. First Options and Subsequent Options shall become exercisable in cumulative monthly installments of 1/12 of the Shares subject to such Option on each of the monthly anniversaries of the date of grant of the Option, commencing with the first such monthly anniversary, such that each such Option shall be one hundred percent (100%) vested on the first anniversary of its date of grant.

11. Restricted Stock Awards.

(a) Rights to Purchase. After the Board determines that it will offer an Employee or Consultant a Restricted Stock award, it shall deliver to the Offeree a stock purchase agreement setting forth the terms, conditions and restrictions relating to the offer. Such agreement shall further specify the number of Shares which such person shall be entitled to purchase, and the time within which such person must accept such offer, which shall in no event exceed six (6) months from the date upon which the Board made the determination to grant the Restricted Stock award. The offer shall be accepted by execution of a stock purchase agreement in the form determined by the Board.

(b) Purchase Price. The Board shall establish the purchase price, if any, and form of payment for each Restricted Stock award; provided; however, that such purchase price shall be no less than one hundred percent (100%) of the fair market value per Share on the date of grant; provided, further, however, that the purchase price per Share may be reduced on a dollar-for-dollar basis to the extent the Restricted Stock award is granted to the Holder in lieu of cash compensation otherwise payable to the Holder. In all cases, legal consideration shall be required for each issuance of a Restricted Stock award.

(c) Issuance of Shares. Forthwith after payment therefor, the Shares purchased shall be duly issued; provided, however, that the Board may require that the Holder make adequate provision for any Federal and State withholding obligations of the Company as a condition to the Holder purchasing such Shares.

(d) Vesting. Subject to the following minimum vesting requirements and the requirements of Section 4(d) of the Plan with respect to Restricted Stock awards granted to Section 162(m) Participants, at the time of the grant of a Restricted Stock award, the Board may impose such restrictions or conditions to the vesting of such Restricted Stock award as it, in its sole discretion, deems appropriate. No Restricted Stock award that is not a Performance Award shall vest at a rate more favorable to the Holder than in pro-rata installments over a three (3) year period measured from the date of grant. The vesting of all Restricted Stock Performance Awards shall be subject to the completion of at least one (1) year of Continuous Status as an Employee or Consultant measured from the date of the grant of the Award. Notwithstanding the foregoing minimum vesting requirements, vesting of Restricted Stock awards may occur earlier in the event of (A) death, (B) Disability, (C) Retirement, or (D) a Change in Control. Additionally, Restricted Stock awards granted pursuant to the exception set forth in Section 3(d) of the Plan are not subject to the foregoing minimum vesting requirements.

(e) Unvested Share Repurchase Option. The stock purchase agreement shall grant the Company an unvested share repurchase option exercisable upon the voluntary or involuntary termination of the Holder’s employment with the Company for any reason (including death or Disability). Subject to applicable laws, if the Board so determines, the purchase price for shares repurchased may be paid by cancellation of any indebtedness of the Holder to the Company.

(f) Other Provisions. The stock purchase agreement shall contain such other terms, provisions and conditions not inconsistent with the Plan as may be determined by the Board.

12. Restricted Stock Unit Awards.

(a) Grant of Restricted Stock Units. Any Employee or Consultant selected by the Board may be granted an Award of Restricted Stock Units in the manner determined from time to time by the Board.

(b) Vesting of Restricted Stock Units. Subject to the following minimum vesting requirements and the requirements of Section 4(d) with respect to Restricted Stock Unit awards granted to Section 162(m) Participants, at the time of the grant of a Restricted Stock Unit award, the Board may impose such restrictions or conditions to the vesting of such Restricted Stock Unit award as it, in its sole discretion, deems appropriate. No Restricted Stock Unit award that is not a Performance Award shall vest at a rate more favorable to the Holder than in pro-rata installments over a three (3) year period measured from the date of grant. The vesting of all Restricted Stock Unit Performance Awards shall be subject to the completion of at least one (1) year of Continuous Status as an Employee or Consultant measured from the date of the grant of the Award. Notwithstanding the foregoing minimum vesting requirements, vesting of Restricted Stock Unit awards may occur earlier in the event of (A) death, (B) Disability, (C) Retirement, or (D) a Change in Control. Additionally, Restricted Stock Unit awards granted pursuant to the exception set forth in Section 3(d) of the Plan are not subject to the foregoing minimum vesting requirements. Common Stock underlying a Restricted Stock Unit award will not be issued until the Restricted Stock Unit award has vested, pursuant to a vesting schedule or Performance Criteria set by the Board.

(c) No Rights as a Stockholder. Unless otherwise provided by the Board, a Holder awarded Restricted Stock Units shall have no rights as a Company stockholder with respect to such Restricted Stock Units until such time as the Restricted Stock Units have vested and the Common Stock underlying the Restricted Stock Units has been issued.

(d) Purchase Price. The Board shall establish the purchase price, if any, and form of payment for each Restricted Stock Unit award; provided, however, that such purchase price shall be no less than one hundred percent (100%) of the fair market value per Share on the date of grant; provided, further, however, that the purchase price per Share may be reduced on a dollar-for-dollar basis to the extent the Restricted Stock Unit award is granted to the Holder in lieu of cash compensation otherwise payable to the Holder. In all cases, legal consideration shall be required for each issuance of a Restricted Stock Unit award.

(e) Other Provisions. The restricted stock unit award agreements shall contain such other terms, provisions and conditions not inconsistent with the Plan as may be determined by the Board.

13. Stock Bonus Awards.

(a) Terms of Award. After the Board determines that it will offer an Employee or Consultant a Stock Bonus award, it shall deliver to the Offeree a stock bonus agreement setting forth the terms, conditions and restrictions relating to the offer and the number of shares to be awarded. The offer shall be accepted by execution of a stock bonus agreement in the form determined by the Board.

(b) Purchase Price. The Board shall establish the purchase price, if any, and form of payment for each Stock Bonus award; provided, however, that such purchase price shall be no less than one hundred percent (100%) of the fair market value per Share on the date of grant; provided, further, however, that the purchase price per Share may be reduced on a dollar-for-dollar basis to the extent the Stock Bonus award is granted to the Holder in lieu of cash compensation otherwise payable to the Holder.

(c) Issuance of Shares. Forthwith after payment therefor, the Shares purchased shall be duly issued; provided, however, that the Board may require that the Holder make adequate provision for any Federal and State withholding obligations of the Company as a condition to the Holder purchasing such Shares.

(d) Vesting. Subject to the following minimum vesting requirements and the requirements of Section 4(d) with respect to Stock Bonus awards granted to Section 162(m) Participants, at the time of the grant of a Stock Bonus award, the Board may impose such restrictions or conditions to the vesting of such Stock Bonus award as it, in its sole discretion, deems appropriate. No Stock Bonus award that is not a Performance Award shall vest at a rate more favorable to the Holder than in pro-rata installments over a three (3) year period measured from the date of grant. The vesting of all Stock Bonus Performance Awards shall be subject to the completion of at least one (1) year of Continuous Status as an Employee or Consultant measured from the date of the grant of the Award. Notwithstanding the foregoing minimum vesting requirements, vesting of Stock Bonus awards may occur earlier in the event of (A) death, (B) Disability, (C) Retirement, or (D) a Change in Control. Additionally, Stock Bonus awards granted pursuant to the exception set forth in Section 3(d) of the Plan are not subject to the foregoing minimum vesting requirements.

(e) Unvested Share Repurchase/Reacquisition Option. The Stock Bonus award agreement shall grant the Company an unvested share repurchase/reacquisition option exercisable upon the voluntary or involuntary termination of the Holder's employment with the Company for any reason (including death or Disability). Subject to applicable laws, if the Board so determines, the purchase price (if any) for shares repurchased may be paid by cancellation of any indebtedness of the Holder to the Company. If no purchase price was paid for the shares, the unvested shares may be reacquired by the Company for no consideration.

(f) Other Provisions. The stock bonus agreement shall contain such other terms, provisions and conditions not inconsistent with the Plan as may be determined by the Board.

14. Non-Transferability of Awards. Unless determined otherwise by the Board, an Award may not be sold, pledged, assigned, hypothecated, transferred, or disposed of in any manner other than by will or by the laws of descent or distribution and may be exercised, during the lifetime of the Holder, only by the Holder. If the Board makes an Award transferable, such Award shall contain such additional terms and conditions as the Board deems appropriate.

15. Adjustments upon Changes in Capitalization or Merger.

(a) Changes in Capitalization. Subject to any action by the Company required by applicable law or regulations or the requirements of the NASDAQ Stock Market or another established stock exchange on which the Company's securities may be traded, and subject to Section 15(d), the

number and kind of shares of Common Stock (or other securities or property) covered by each outstanding Award, and the number and kind of shares of Common Stock (or other securities or property) which have been authorized for issuance under the Plan but as to which no Awards have yet been granted or which have been returned to the Plan upon cancellation or expiration of an Award, as well as the price per share of Common Stock (or other securities or property) covered by each such outstanding Award, shall be adjusted proportionately to the extent the Board determines that any increase, decrease or adjustment in the number or kind of issued shares of Common Stock (or other securities or property), dividend, distribution, stock split, reverse stock split, stock dividend, combination or reclassification of the Common Stock, reorganization, merger, consolidation, split-up, repurchase, liquidation, dissolution, or sale, transfer, exchange or other disposition of all or substantially all of the assets of the Company, exchange of Common Stock or other securities of the Company, or other similar corporate transaction or event, in the Boards sole discretion, affects the Common Stock such that an adjustment is determined by the Board to be appropriate in order to prevent dilution or enlargement of the benefits or potential benefits intended to be made available under the Plan or with respect to an Award. Such adjustment shall be made by the Board, whose determination in that respect shall be final, binding and conclusive. Except as expressly provided herein, no issuance by the Company of shares of stock of any class, or securities convertible into shares of stock of any class, shall affect, and no adjustment by reason thereof shall be made with respect to, the number or price of shares of Common Stock subject to an Award.

(b) Dissolution or Liquidation. In the event of the proposed dissolution or liquidation of the Company, the Board shall notify the Holder at least fifteen (15) days prior to such proposed action. To the extent it has not been previously exercised, the Award shall terminate immediately prior to the consummation of such proposed action.

(c) Merger or Asset Sale. Unless otherwise provided in the Award Agreement, in the event of a merger, sale of all or substantially all of the assets of the Company, tender offer or other transaction or series of related transactions resulting in a change of ownership of more than fifty percent (50%) of the voting securities of the Company ("Change in Control") approved by the majority of the members of the Board on the Board prior to the commencement of such Change in Control, each outstanding Award shall be assumed or an equivalent award substituted by the successor corporation or a Parent or Subsidiary of the successor corporation; provided, however, in the event that within one year of the date of the completion of the Change in Control, the successor corporation or a Parent or Subsidiary of the successor corporation terminates the employment of a Holder that is an Employee without Cause (as defined below), such Holder shall fully vest in and, if applicable, have the right to exercise the award assumed or substituted for the Award as to all of the Shares subject to the Award, including Shares as to which it would not otherwise be exercisable. In the event that the successor corporation refuses to assume or substitute the Award, the Holder shall fully vest in and, if applicable, have the right to exercise the Award as to all of the Shares subject to the Award, including Shares as to which it would not otherwise be exercisable. If an Award becomes fully vested and exercisable in lieu of assumption or substitution in the event of a Change in Control, the Board shall notify the Holder in writing or electronically that the Award shall be fully vested and exercisable for a period of fifteen (15) days from the date of such notice, and the Award shall terminate upon the expiration of such period, if applicable.

For the purposes of this paragraph, the Award shall be considered assumed if, following the Change in Control, the Award confers the same acquisition rights for each Share subject to the Award immediately prior to the Change in Control, the consideration (whether stock, cash, or other securities or property) received in the Change in Control by holders of Common Stock for each Share held on the effective date of the transaction (and if holders were offered a choice of consideration, the type of consideration chosen by the holders of a majority of the outstanding Shares); provided, however, that if such consideration received in the Change in Control is not solely common stock of the successor corporation or its Parent, the Board may, with the consent of the successor corporation, provide for the consideration to be received pursuant to the Award, for each Share subject to the Award, to be solely common stock of the successor corporation or its Parent equal in fair market value to the per share consideration received by holders of Common Stock in the Change in Control.

For purposes of this paragraph, termination shall be for "Cause" in the event of the occurrence of any of the following: (a) any intentional action or intentional failure to act by Employee which was performed in bad faith and to the material detriment of the successor corporation or its Parent or Subsidiary; (b) Employee neglects the duties of employment; or Employee is convicted of a felony crime involving moral turpitude; provided, that in the event that any of the foregoing events is capable of being cured, the successor corporation or its Parent or Subsidiary shall provide written notice to the Employee describing the nature of such event and the Employee shall thereafter have five (5) business days to cure such event.

In the event of a Change in Control which is not approved by the majority of the members of the Board on the Board prior to the commencement of a Change in Control, each Holder shall fully vest in and, if applicable, have the right to exercise all outstanding Awards as to all of the Shares subject to such Award, including Shares as to which it would not otherwise be exercisable.

(d) With respect to Awards which are granted to Section 162(m) Participants and are intended to qualify as performance-based compensation under Section 162(m)(4)(C), no adjustment or action described in this Section 15 or in any other provision of the Plan shall be authorized to the extent that such adjustment or action would cause such Award to fail to so qualify under Section 162(m)(4)(C), or any successor provisions thereto.

16. Date of Granting Awards. The date of grant of an Award shall, for all purposes, be the date on which the Board makes the determination granting such Award. Notice of the determination shall be given to each Employee or Consultant to whom an Award is so granted within a reasonable time after the date of such grant.

17. Amendment and Termination of the Plan.

(a) Amendment and Termination. The Board may at any time amend, alter, suspend or discontinue the Plan, but no amendment, alteration, suspension or discontinuation shall be made which would impair the rights of any Holder under any grant theretofore made, without his or her consent. In addition, to the extent necessary and desirable to comply with Section 422 of the Code (or any other applicable laws or regulation, the requirements of the NASDAQ Stock Market or another established stock exchange), the Company shall obtain stockholder approval of any Plan amendment in such a manner and to such a degree as required.

(b) Effect of Amendment or Termination. Any such amendment or termination of the Plan shall not affect Awards already granted, and such Awards shall remain in full force and effect as if this Plan had not been amended or terminated, unless mutually agreed otherwise between the Holder, as applicable, and the Board, which agreement must be in writing and signed by the Holder, as applicable, and the Company.

18. Conditions upon Issuance of Shares. Shares shall not be issued pursuant to the exercise of an Award unless the exercise of such Award and the issuance and delivery of such Shares pursuant thereto shall comply with all relevant provisions of law, including, without limitation, the Securities Act of 1933, as amended, the Securities Exchange Act of 1934, as amended, the rules and regulations promulgated thereunder, and/or the requirements of the NASDAQ Stock Market or any other stock exchange upon which the Shares may then be listed, and shall be further subject to the approval of counsel for the Company with respect to such compliance. As a condition to the exercise of an Award, the Company may require the person exercising such Award to represent and warrant at the time of any such exercise that the Shares are being purchased only for investment and without any present intention to sell or distribute such Shares if, in the opinion of counsel for the Company, such a representation is required by any of the aforementioned relevant provisions of law.

19. Reservation of Shares. The Company, during the term of this Plan, will at all times reserve and keep available such number of Shares as shall be sufficient to satisfy the requirements of the Plan. The inability of the Company to obtain authority from any regulatory body having jurisdiction, which authority is deemed by the Company's counsel to be necessary to the lawful issuance and sale of any Shares hereunder, shall relieve the Company of any liability in respect of the failure to issue or sell such Shares as to which such requisite authority shall not have been obtained.

20. Award Agreements. Options shall be evidenced by written Option Agreements in such form, as the Board shall approve. Restricted Stock awards, Restricted Stock Unit awards, or Stock Bonus awards shall be evidenced by written restricted stock award agreements, restricted stock unit award agreements, or stock bonus agreements, respectively, in such form as the Board shall approve.

21. Stockholder Approval. Continuance of the Plan shall be subject to approval by the stockholders of the Company within twelve (12) months before or after the date the Plan is adopted. Such stockholder approval shall be obtained in the degree and manner required under applicable laws and the rules of the NASDAQ Stock Market or any other stock exchange upon which the Common Stock is listed.

22. Section 409A of the Code. In the event any provision of the Plan, or the application thereof, is or becomes inconsistent with Section 409A of the Code and any regulations promulgated thereunder, such provision shall be void or unenforceable or in the sole discretion of the Board shall be deemed amended to comply with Section 409A and any regulations promulgated thereunder. The other provisions of the Plan shall remain in full force and effect.

Ascendant MDx, Inc.

2011 Incentive Stock Plan

Stock Option Agreement

Unless otherwise defined herein, the terms defined in the 2010 Stock Option Plan as amended, (the "Plan") shall have the same defined meanings in this Option Agreement.

I. NOTICE OF STOCK OPTION GRANT

NAME

ADDRESS

CITY, STATE ZIP

You have been granted an option to purchase Common Stock of the Company, subject to the terms and conditions of the Plan and this Option Agreement, as follows:

Date of Grant:

Vesting Commencement Date

Exercise Price per Share:

Total Number of Shares Granted:

Total Exercise Price:

Type of Option:

NQ Nonstatutory Stock Option

Term/Expiration Date:

Vesting Schedule:

This Option may be exercised, in whole or in part, in accordance with the following schedule:

[25% of the Shares subject to the Option shall vest twelve months after the Vesting Commencement Date, and 1/48 of the Shares subject to the Option shall vest each month thereafter, subject to the Optionee continuing to be an Employee or Consultant on such dates.

or

One third (1/3) of the Shares subject to the Option shall vest annually beginning one year after the Vesting Commencement Date, subject to the Optionee continuing to be an Employee or Consultant on such dates.]

Termination Period:

This Option may be exercised for ninety (90) days (or such other period of time not exceeding six (6) months, as is determined by the Board) after Optionee's Continuous Status as an Employee or Consultant terminates. Upon the death or Disability of the Optionee, this Option may be exercised for six (6) months after Optionee's Continuum Status as an Employee or Consultant. In no event shall this Option be exercised later than the Term/Expiration Date as provided above.

II. AGREEMENT

1. Grant of Option. The Plan Administrator of the Company hereby grants to the Optionee named in the Notice of Grant attached as Part I of this Agreement (the "Optionee") an option (the "Option") to purchase the number of Shares,

as set forth in the Notice of Grant, at the exercise price per share set forth in the Notice of Grant (the "Exercise Price"), subject to the terms and conditions of the Plan, which is incorporated herein by reference. Subject to Section 13(b) of the Plan, in the event of a conflict between the terms and conditions of the Plan and the terms and conditions of this Option Agreement, the terms and conditions of the Plan shall prevail.

If designated in the Notice of Grant as an Incentive Stock Option ("ISO"), this Option is intended to qualify as an Incentive Stock Option under Section 422 of the Code. However, if this Option is intended to be an Incentive Stock Option, to the extent that it exceeds the $100,000 rule of Code Section 422(d) it shall be treated as a Nonstatutory Stock Option ("NSO").

2. Exercise of Option.

(a) Right to Exercise. This Option is exercisable during its term in accordance with the Vesting Schedule set out in the Notice of Grant and the applicable provisions of the Plan and this Option Agreement.

(b) Method of Exercise. This Option is exercisable by delivery of an exercise notice, in the form attached as Exhibit A (the "Exercise Notice"), which shall state the election to exercise the Option, the number of Shares in respect of which the Option is being exercised (the "Exercised Shares"), and such other representations and agreements as may be required by the Company pursuant to the provisions of the Plan. The Exercise Notice shall be completed by the Optionee and delivered to the President, the Chief Financial Officer or Secretary of the Company. The Exercise Notice shall be accompanied by payment of the aggregate Exercise Price as to all Exercised Shares. This Option shall be deemed to be exercised upon receipt by the Company of such fully executed Exercise Notice accompanied by such aggregate Exercise Price.

No Shares shall be issued pursuant to the exercise of this Option unless such issuance and exercise complies with Applicable Laws. Assuming such compliance, for income tax purposes the Exercised Shares shall be considered transferred to the Optionee on the date the Option is exercised with respect to such Exercised Shares.

3. Method of Payment. Payment of the aggregate Exercise Price shall be by any of the following, or a combination thereof, at the election of the Optionee:

(a) cash; or

(b) check; or

(c) consideration received by the Company under a cashless exercise program implemented by the Company in connection with the Plan; or

(d) surrender of other Shares which (i) in the case of Shares acquired upon exercise of an option, have been owned by the Optionee for more than six (6) months on the date of surrender, and (ii) have a Fair Market Value on the date of surrender equal to the aggregate Exercise Price of the Exercised Shares.

4. Non-Transferability of Option. This Option may not be transferred in any manner otherwise than by will or by the laws of descent or distribution and may be exercised during the lifetime of Optionee only by the Optionee. The terms of the Plan and this Option Agreement shall be binding upon the executors, administrators, heirs, successors and assigns of the Optionee.

5. Term of Option. This Option may be exercised only within the term set out in the Notice of Grant, and may be exercised during such term only in accordance with the Plan and the terms of this Option Agreement.

6. Tax Consequences. Some of the federal tax consequences relating to this Option, as of the date of this Option, are set forth below. THIS SUMMARY IS NECESSARILY INCOMPLETE, AND THE TAX LAWS AND REGULATIONS ARE SUBJECT TO CHANGE. THE OPTIONEE SHOULD CONSULT A TAX ADVISER BEFORE EXERCISING THIS OPTION OR DISPOSING OF THE SHARES.

(a) Exercising the Option.

(i) Nonstatutory Stock Option. The Optionee may incur regular federal income tax liability upon exercise of a NSO. The Optionee will be treated as having received compensation income (taxable at ordinary income tax rates) equal to the excess, if any, of the Fair Market Value of the Exercised Shares on the date of exercise over their aggregate Exercise Price. If the Optionee is an Employee or a former Employee, the Company will be required to withhold from his or her compensation or collect from Optionee and pay to the applicable taxing authorities an amount in cash equal to a percentage of this compensation income at the time of exercise, and may refuse to honor the exercise and refuse to deliver Shares if such withholding amounts are not delivered at the time of exercise.

(ii) Incentive Stock Option. If this Option qualifies as an ISO, the Optionee will have no regular federal income tax liability upon its exercise, although the excess, if any, of the Fair Market Value of the Exercised Shares on the date of exercise over their aggregate Exercise Price will be treated as an adjustment to alternative minimum taxable income for federal tax purposes and may subject the Optionee to alternative minimum tax in the year of exercise. In the event that the Optionee ceases to be an Employee but continues to provide services to the Company, any Incentive Stock Option of the Optionee that remains unexercised shall cease to qualify as an Incentive Stock Option and will be treated for tax purposes as a Nonstatutory Stock Option on the date three (3) months and one (1) day following such change of status.

(b) Disposition of Shares.

(i) NSO. If the Optionee holds NSO Shares for at least one year, any gain realized on disposition of the Shares will be treated as long-term capital gain for federal income tax purposes (holding the Shares for more than eighteen (18) months may lower the long-term capital gains rate).

(ii) ISO. If the Optionee holds ISO Shares for at least one year after exercise and two years after the grant date, any gain realized on disposition of the Shares will be treated as long-term capital gain for federal income tax purposes. If the Optionee disposes of ISO Shares within one year after exercise or two years after the grant date, any gain realized on such disposition will be treated as compensation income (taxable at ordinary income rates) to the extent of the excess, if any, of the lesser of (A) the difference between the Fair Market Value of the Shares acquired on the date of exercise and the aggregate Exercise Price, or (B) the difference between the sale price of such Shares and the aggregate Exercise Price. Any additional gain will be taxed as capital gain, short-term or long-term depending on the period that the ISO Shares were held.

(c) Notice of Disqualifying Disposition of ISO Shares. If the Optionee sells or otherwise disposes of any of the Shares acquired pursuant to an ISO on or before the later of (i) two years after the grant date, or (ii) one year after the exercise date, the Optionee shall immediately notify the Company in writing of such disposition. The Optionee agrees that he or she may be subject to income tax withholding by the Company on the compensation income recognized from such early disposition of ISO Shares by payment in cash or out of the current earnings paid to the Optionee.

7. Entire Agreement; Governing Law. The Plan is incorporated herein by reference. The Plan and this Option Agreement constitute the entire agreement of the parties with respect to the subject matter hereof and supersede in their entirety all prior undertakings and agreements of the Company and Optionee with respect to the subject matter hereof, and may not be modified adversely to the Optionee's interest except by means of a writing signed by the Company and Optionee. This agreement is governed by the internal substantive laws, but not the choice of law rules, of California.

8. NO GUARANTEE OF CONTINUED SERVICE. OPTIONEE ACKNOWLEDGES AND AGREES THAT THE VESTING OF SHARES PURSUANT TO THE VESTING SCHEDULE HEREOF IS EARNED ONLY BY CONTINUING AS AN EMPLOYEE OR CONSULTANT AT THE WILL OF THE COMPANY (AND NOT THROUGH THE ACT OF BEING HIRED, BEING GRANTED AN OPTION OR PURCHASING SHARES HEREUNDER).

OPTIONEE FURTHER ACKNOWLEDGES AND AGREES THAT THIS AGREEMENT, THE TRANSACTIONS CONTEMPLATED HEREUNDER AND THE VESTING SCHEDULE SET FORTH HEREIN DO NOT CONSTITUTE AN EXPRESS OR IMPLIED PROMISE OF CONTINUED ENGAGEMENT AS AN EMPLOYEE

OR CONSULTANT FOR THE VESTING PERIOD, FOR ANY PERIOD, OR AT ALL, AND SHALL NOT INTERFERE WITH OPTIONEE'S RIGHT OR THE COMPANY'S RIGHT TO TERMINATE OPTIONEE'S RELATIONSHIP AS AN EMPLOYEE OR CONSULTANT AT ANY TIME, WITH OR WITHOUT CAUSE.

By your signature and the signature of the Company's representative below, you and the Company agree that this Option is granted under and governed by the terms and conditions of the Plan and this Option Agreement. Optionee has reviewed the Plan and this Option Agreement in their entirety, has had an opportunity to obtain the advice of counsel prior to executing this Option Agreement and fully understands all provisions of the Plan and Option Agreement. Optionee hereby agrees to accept as binding, conclusive and final all decisions or interpretations of the Administrator upon any questions relating to the Plan and Option Agreement. Optionee further agrees to notify the Company upon any change in the residence address indicated below.

OPTIONEE:	Ascendant MDx, Inc.
Signature	Signature
Date	Date

NAME:

ADDRESS:

CITY, STATE ZIP:

CONSENT OF SPOUSE:

The undersigned spouse of Optionee has read and hereby approves the terms and conditions of the Plan and this Option Agreement In consideration of the Company's granting his or her spouse the right to purchase Shares as set forth in the Plan and this Option Agreement, the undersigned hereby agrees to be irrevocably bound by the terms and conditions of the Plan and this Option Agreement and further agrees that any community property interest shall be similarly bound. The undersigned hereby appoints the undersigned's spouse as attorney-in-fact for the undersigned with respect to any amendment or exercise of rights under the Plan or this Option Agreement.

_____

Spouse of Optionee

Ascendant MDx, Inc.

2011 Incentive Stock Plan

Stock Option Agreement

EXHIBIT A

EXERCISE NOTICE

Ascendant MDx, Inc.
2173 Salk Avenue
Carlsbad, CA 92008
Attention: Secretary

1. Exercise of Option. Effective as of today, _____, 20__, the undersigned ("Purchaser") hereby elects to purchase _____ shares (the "Shares") of the Common Stock of Ascendant MDx, Inc. (the "Company") under and pursuant to the 2003 Stock Option Plan as amended (the "Plan") and the Stock Option Agreement dated _____, 20__ (the "Option Agreement"). The purchase price for the Shares shall be $____, as required by the Option Agreement.

2. Delivery of Payment. Purchaser herewith delivers to the Company the full purchase price for the Shares.

3. Representations of Purchaser. Purchaser acknowledges that Purchaser has received, read and understood the Plan and the Option Agreement and agrees to abide by and be bound by their terms and conditions.

4. Rights as Shareholder. Until the issuance (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company) of the Shares, no right to vote or receive dividends or any other rights as a shareholder shall exist with respect to the Optioned Stock, notwithstanding the exercise of the Option. The Shares so acquired shall be issued to the Optionee as soon as practicable after exercise of the Option. No adjustment will be made for a dividend or other right for which the record date is prior to the date of issuance, except as provided in Section 11 of the Plan.

5. Tax Consultation. Purchaser understands that Purchaser may suffer adverse tax consequences as a result of Purchaser's purchase or disposition of the Shares. Purchaser represents that Purchaser has consulted with any tax consultants Purchaser deems advisable in connection with the purchase or disposition of the Shares and that Purchaser is not relying on the Company for any tax advice.

6. Entire Agreement; Governing Law. The Plan and Option Agreement are incorporated herein by reference. This Agreement, the Plan and the Option Agreement constitute the entire agreement of the parties with respect to the subject matter hereof and supersede in their entirety all prior undertakings and agreements of the Company and Purchaser with respect to the subject matter hereof, and may not be modified adversely to the Purchaser's interest except by means of a writing signed by the Company and Purchaser. This agreement is governed by the internal substantive laws, but not the choice of law rules, of California.

Submitted by:	Accepted by:
PURCHASER:	Ascendant MDx, Inc.
_____	_____
Signature	Signature
_____	_____
Print Name	Print Name
	Date Received _____

Ascendant MDx, Inc.

2011 Incentive Stock Plan

Restricted Option Grant Agreement

Grant Notice

Ascendant MDx, Inc. (the "Company") hereby grants you, _____ (the "Employee"), an award of Restricted Stock Units ("RSUs") under the Company's 2010 Incentive Stock Plan, as amended (the "Plan"), the terms of which are hereby incorporated by reference. The date of this Restricted Stock Unit Agreement, which includes Appendix A attached hereto and incorporated herein (the "Agreement"), is _____ (the "Effective Date"). Subject to the remaining terms of this Agreement and of the Plan, the principal features of this award are as follows:

Number of RSUs: _____

Vesting of RSUs: The RSUs will vest according to the following schedule:

So long as you remain in Continuous Status as an Employee or Consultant through each such date, 1/3 of the RSUs shall vest on each of the thirteen (13), twenty-four (24) and thirty-six (36) month anniversaries of the Effective Date, so that the RSUs will become fully vested on the thirty-six (36) month anniversary of the Effective Date (the "Vesting Schedule"). The RSUs are also subject to the vesting conditions set forth in paragraph 4 of the attached Appendix A.

Unless otherwise defined herein or in Appendix A, capitalized terms herein or in Appendix A shall have the defined meanings ascribed to them in the Plan.

Your signature below indicates your agreement and understanding that this award is subject to all of the terms and conditions contained in this Agreement (including Appendix A) and the Plan. For example, important additional information on vesting and forfeiture of the RSUs is contained in Paragraphs 4 through 6 of Appendix A. PLEASE BE SURE TO READ ALL OF APPENDIX A, WHICH CONTAINS THE SPECIFIC TERMS AND CONDITIONS OF THIS AGREEMENT.

Ascendant MDx, Inc.	Employee
_____	_____
President	Name
_____	_____
Date:	Address

Ascendant MDx, Inc.

2011 Incentive Stock Plan

Restricted Option Grant Agreement

APPENDIX A

TERMS AND CONDITIONS OF RESTRICTED STOCK UNITS

1. Grant. The Company hereby grants to the Employee under the Plan an award of that number of RSUs set forth on the first page of this Agreement, subject to all of the terms and conditions in this Agreement and the Plan.

2. Plan Governs. The RSUs are issued pursuant to, and the terms of this Agreement are subject to, all terms and provisions of the Plan, including without limitation Section 15 of the Plan. Except as provided in paragraph 4(b) below, in the event of a conflict between one or more provisions of this Agreement and one or more provisions of the Plan, the provisions of the Plan will govern.

3. Company's Obligation to Pay. Each RSU has a value equal to the fair market value of a share of Common Stock on the date the shares subject thereto are distributed. Unless and until the RSUs will have vested in the manner set forth in paragraphs 4 and 5, the Employee will have no right to payment of any such RSUs. Prior to actual payment of any vested RSUs, such RSUs will represent an unsecured obligation of the Company, payable (if at all) only from the general assets of the Company. Nothing contained in this Agreement, and no action taken pursuant to its provisions, shall create or be construed to create a trust of any kind or fiduciary relationship between Employee and the Company or any other person.

4. Vesting.

(a) Subject to paragraph 5, the RSUs awarded by this Agreement will vest in the Employee according to the Vesting Schedule set forth on the first page of this Agreement, subject to the Employee's remaining in Continuous Status as an Employee or Consultant through such vesting periods or dates.

(b) Notwithstanding anything to the contrary set forth in the Plan, the vesting of the RSUs awarded by this Agreement shall not accelerate in accordance with Section 9(d) of the Plan in connection with a termination of Employee's Continuous Status as an Employee as a result of Employee's retirement from the Company.

(c) In the event of a Change in Control of the Company approved by the majority of the members of the Board on the Board prior to the commencement of such Change in Control, the RSUs shall be assumed or an equivalent award or right substituted by the successor corporation or a Parent or Subsidiary of the successor corporation; provided, however, in the event that within one year of the date of the completion of the Change in Control, the successor corporation or a Parent or Subsidiary of the successor corporation terminates the Employee without Cause, the RSUs shall become immediately fully vested. In the event that the successor corporation refuses to assume or substitute the RSUs, the RSUs shall become immediately fully vested and the shares subject to the RSUs shall be issued to Employee immediately prior to the Change in Control, provided that such transaction also qualifies as a change in the ownership or effective control of the Company, or in the ownership of a substantial portion of the assets of the Company, in each case for purposes of Section 409A(a)(2)(A)(v) of the Internal Revenue Code and the regulations and other guidance thereunder ("Section 409A Change of Control").

(d) In the event of a Change in Control which is not approved by the majority of the members of the Board on the Board prior to the commencement of a Change in Control, the RSUs shall immediately fully vest. In the event that the successor corporation refuses to assume or substitute the RSUs, the shares subject to the RSUs shall be issued to Employee immediately prior to the Change in Control, provided that such transaction also qualifies as a Section 409A Change of Control.

(e) The RSUs shall be considered assumed if, following the Change in Control, the RSUs confer the right to receive, for each Share of Common Stock subject to the RSUs immediately prior to the Change in Control, the consideration (whether stock, cash, or other securities or property) received in the Change in Control by

holders of Common Stock for each Share held on the effective date of the transaction (and if holders were offered a choice of consideration, the type of consideration chosen by the holders of a majority of the outstanding Shares); provided, however, that if such consideration received in the Change in Control is not solely common stock of the successor corporation or its Parent, the Board may, with the consent of the successor corporation, provide for the consideration to be issued pursuant to the RSUs, for each Share of Common Stock subject to the RSUs, to be solely common stock of the successor corporation or its Parent equal in fair market value to the per share consideration received by holders of Common Stock in the Change in Control.

5. Forfeiture upon Termination as Service Provider. Notwithstanding any contrary provision of this Agreement, if the Employee terminates Continuous Status as an Employee or Consultant for any or no reason, the then-unvested RSUs awarded by this Agreement will thereupon be forfeited at no cost to the Company and the Employee shall have no further rights thereunder. To the extent not already paid, RSUs that vest in accordance with the Vesting Schedule shall be paid following the Employee's termination of Continuous Status as an Employee or Consultant in accordance with paragraph 6 or 8 below, as applicable.

6. Issuance after Vesting. If Employee does not elect to defer his or her distribution of the shares subject to the RSUs in accordance with paragraph 8 below, shares of Common Stock subject to any RSUs that vest in accordance with the Vesting Schedule will be issued to the Employee (or in the event of the Employee's death, to his or her estate) in whole shares of Common Stock on each of the thirteen (13), twenty-four (24) and thirty-six (36) month anniversaries of the Effective Date (each a "Vesting Distribution Date"), in each case not later than ten (10) days following each Vesting Distribution Date, with respect to shares of Common Stock subject to those RSUs that have vested on each such date.

7. Tax Withholding. On or before the time Employee receives a distribution of shares of Common Stock pursuant to the RSUs, or at any time thereafter as requested by the Company, the Employee must make adequate provision, as determined by the Company, for any sums required to satisfy the federal, state, local and foreign tax withholding obligations of the Company or a Subsidiary, if any, which arise in connection with the vesting and/or issuance of the shares subject to the RSUs. Unless the tax withholding obligations of the Company and/or any Subsidiary are satisfied, the Company shall have no obligation to issue the shares of Common Stock subject to the RSU. If the Employee does not satisfy the tax withholding obligations of the Company and/or any Subsidiary within thirty (30) days following receipt of notice from the Company, then the RSU will automatically terminate and the Employee will not be issued any shares pursuant to the RSU.

8. Deferral Election.

(a) Election Whether to Defer Distribution of RSU Shares. Each Employee must elect whether to defer his or her distribution of the RSU shares to a date following the Vesting Distribution Date in accordance with paragraph 8(b). If an Employee does not make a valid, timely election pursuant to paragraph 8(b), the Employee will be deemed to have affirmatively elected not to defer his or her distribution of the RSU shares, and the shares will be delivered to Employee in accordance with paragraph 6.

(b) Deferral Election. Employees must make an election whether to defer receipt of the RSU shares pursuant to the terms and conditions of the Standard Deferral Election Agreement attached hereto as Exhibit A. Subject to a valid deferral election made within thirty (30) days following the Effective Date, the Employee may elect to defer the timing of the receipt of shares under this Agreement and have such shares issued at a later date pursuant to the terms and conditions of the Standard Deferral Election Agreement. Such deferral elections must also comply with the requirements of Section 409A of the Internal Revenue Code of 1986, as amended (the "Code"), and the related Treasury Regulations or other guidance issued thereunder.

(c) Deferred Distribution Date. The date upon which the shares of Common Stock are scheduled to be delivered pursuant to any deferral election made under this paragraph 8 is the "Deferred Distribution Date." Shares of Common Stock subject to any RSUs that are subject to any deferral election made under this paragraph 8

will be issued to the Employee (or in the event of the Employee's death, to his or her estate) in whole shares of Common Stock in each case not later than ten (10) days following the Deferred Distribution Date.

9. Delay in Issuance of Shares. Notwithstanding anything to the contrary set forth herein, if the Company determines that the Employee's sale of shares of Common Stock on the date the shares subject to the RSUs are scheduled to be delivered, whether on the Vesting Distribution Date or a Deferred Distribution Date selected pursuant to paragraph 8 above (in either case, the "Original Distribution Date") would violate its policy regarding insider trading of the Company's stock, as determined by the Company in accordance with such policy, then such shares shall not be delivered on such Original Distribution Date and shall instead be delivered as soon as practicable on or after the earliest date on which the Employee could sell such shares pursuant to such policy; provided, however, that in no event shall the delivery of the shares be delayed pursuant to this provision beyond the later of: (1) December 31st of the same calendar year of the Original Distribution Date, or (2) the 15th day of the third calendar month following the Original Distribution Date.

10. Rights as Stockholder. Neither the Employee nor any person claiming under or through the Employee will have any of the rights or privileges of a stockholder of the Company in respect of any shares of Common Stock deliverable hereunder unless and until certificates representing such shares of Common Stock will have been issued, recorded on the records of the Company or its transfer agents or registrars, and delivered to the Employee.

11. No Effect on Employment. This Agreement is not an employment contract, and nothing herein shall be deemed to create in any way whatsoever any obligation on the Employee's part to continue in the employ of the Company, or of the Company to continue the Employee's employment with the Company. The Employee's employment with the Company is on an at will basis only. The Company will have the right, which is hereby expressly reserved, to terminate or change the terms of the employment of the Employee at any time for any reason whatsoever, with or without good cause.

12. Address for Notices. Any notice to be given to the Company under the terms of this Agreement will be addressed to the Company at its principal place of business (attention: President), or at such other address as the Company may hereafter designate in writing. Any notices provided for in this Agreement or the Plan shall be given in writing and shall be deemed effectively given upon receipt or, in the case of notices delivered by the Company to the Employee, five (5) days after deposit in the United States mail, postage prepaid, addressed to the Employee at the address specified on the first page of this Agreement or at such other address as the Employee may hereafter designate by written notice to the Company.

13. Transferability. Unless determined otherwise by the Board, this grant and the rights and privileges conferred hereby, including without limitation the shares of Common Stock issuable following the vesting of the RSUs, will not be sold, pledged, assigned, hypothecated, transferred, or disposed of in any manner (whether by operation of law or otherwise) and will not be subject to sale under execution, attachment or similar process until, with respect to whole shares of Common Stock issuable following the vesting of the RSUs, such shares are issued pursuant to paragraph 6 or 8 above. Upon any attempt to sell, pledge, assign, hypothecate, transfer, or dispose of this grant, or any right or privilege conferred hereby, or upon any attempted sale under any execution, attachment or similar process, this grant and the rights and privileges conferred hereby immediately will become null and void.

14. Binding Agreement. Subject to the limitations on the transferability of this grant contained herein, this Agreement will be binding upon and inure to the benefit of the heirs, legatees, legal representatives, successors and assigns of the parties hereto.

15. Additional Conditions to Issuance of Stock. If at any time the Company will determine, in its discretion, that the listing, registration or qualification of the shares of Common Stock upon any securities exchange or under any state or federal law, or the consent or approval of any governmental regulatory authority, is necessary or desirable as a condition to the issuance of shares of Common Stock to the Employee (or his or her estate), such issuance will not occur unless and until such listing, registration, qualification, consent or approval will have been effected or obtained free of any conditions not acceptable to the Company. The Company will make all reasonable efforts to meet the

requirements of any such state or federal law or securities exchange and to obtain any such consent or approval of any such governmental authority.

16. Board Authority. The Board will have the power to interpret the Plan and this Agreement and to adopt such rules for the administration, interpretation and application of the Plan and this Agreement as are consistent therewith and to interpret or revoke any such rules. All actions taken and all interpretations and determinations made by the Board in good faith will be final and binding upon Employee, the Company and all other interested persons. No member of the Board will be personally liable for any action, determination or interpretation made in good faith with respect to the Plan or this Agreement.

17. Captions. Caption provided herein are for convenience only and are not to serve as a basis for interpretation or construction of this Agreement.

18. Agreement Severable. In the event that any provision in this Agreement will be held invalid or unenforceable, such provision will severable from, and such invalidity or unenforceability will not be construed to have any effect on, the remaining provisions of this Agreement.

19. Amendment. The Committee may amend, terminate or revoke this Agreement in any respect to the extent determined necessary or desirable by the Committee in its discretion to comply with the requirements of Section 409A of the Code and the Treasury Regulations or other guidance issued thereunder. Employee expressly understands and agrees that no additional consent of Employee shall be required in connection with such amendment, termination or revocation.

Ascendant MDx, Inc.

2011 Incentive Stock Plan

Restricted Option Grant Agreement

EXHIBIT A

Standard Deferral Election Agreement

Please complete this Standard Deferral Election Agreement ("Election Agreement") and return a signed copy to President no later than the thirtieth (30th) day following the Effective Date as indicated on your Restricted Stock Unit Agreement.

I. Deferral Election (check one)

Election to Defer:

— Employee hereby irrevocably elects to defer receipt of the shares of Common Stock associated with the RSUs provided for in the Grant Notice and Appendix A thereto, to which this Exhibit A is attached, until the fifth anniversary of the Effective Date.

Decline:

— Employee hereby irrevocably elects not to defer receipt of the shares of Common Stock associated with the RSUs provided for in the Grant Notice and Appendix A thereto, to which this Exhibit A is attached (shares will be issued to Employee as the RSU award vests in accordance with the Restricted Stock Unit Agreement).

II. Terms and Conditions of Deferral Election

If Employee elects to defer receipt of the shares subject to the RSU pursuant to this Election Agreement, by signing this Election Agreement, Employee hereby acknowledges his or her understanding and acceptance of each of the following:

1. Acceleration of Issuance of Shares Upon Termination of Continuous Status as an Employee or Consultant. In the event of Employee's termination of Continuous Status as an Employee or Consultant prior to the fifth anniversary of the Effective Date that qualifies as a "separation from service" within the meaning of Code Section 409A(a)(2)(A)(i) and the regulations and other guidance promulgated thereunder, then any vested shares of Common Stock subject to the RSUs shall instead be delivered to Employee on the date of his or her termination of Continuous Status as an Employee or Consultant.

2. Acceleration of Issuance of Shares Upon Chance in Control. Notwithstanding Employee's deferral election pursuant to this Election Agreement, in the event that a successor corporation refuses to assume or substitute the RSUs in connection with a Change in Control, the shares subject to the RSUs shall instead be issued to Employee immediately prior to the Change in Control to the extent provided in paragraph 4 of the Appendix.

3. Delay in Distribution for Specified Employees. Notwithstanding anything to the contrary set forth herein, if at the time the shares of Common Stock would otherwise be issued to Employee as a result of termination of Continuous Status as an Employee or Consultant, Employee is subject to the distribution limitations contained in Section 409A of the Code applicable to "specified employees," share issuances resulting from a termination of Continuous Status as an Employee or Consultant shall not be made before the date which is six (6) months following the date of termination of Continuous Status as an Employee or Consultant, or, if earlier, the date of Employee's death that occurs within such six (6) month period.

4. Delay in Distribution for Insiders. Notwithstanding the foregoing election, as described in paragraph 9 of the Appendix to the RSU Agreement, the distribution of shares may be delayed if the Company determines that Employee's sale of the shares on such date would violate the Company's policy regarding insider trading of the Company's stock, as determined by the Company in accordance with such policy.

5. Effective Election. In order for the foregoing deferral election to become effective, this Election Agreement must be submitted by Employee to the President on or before thirty (30) days following the Effective Date of the RSUs.

6. Withholding. The Company shall require that Employee make adequate provision for any federal, state, or local tax required by law to be withheld prior to the issuance of the shares of Common Stock.

7. Nonassignable. Employee's rights and interests under this Election Agreement may not be assigned, pledged, or transferred.

8. Termination of this Election Agreement. The Company reserves the right to terminate this Election Agreement at any time. In such case, any vested shares of Common Stock granted to Employee pursuant to the Restricted Stock Unit Agreement may be issued to Employee immediately, to the extent permitted by Section 409A of the Code and the regulations and other guidance promulgated thereunder.

9. Bookkeeping Account. The Company will establish a bookkeeping account to reflect the number of shares of Common Stock that Employee may acquire pursuant to the RSUs and the fair market value of such shares of Common Stock that are subject to this Election Agreement.

10. Governing Law. This Election Agreement shall be construed and administered according to the internal laws of the State of California, without regard to its conflicts of laws principles.

III. Authorization and Signature

By completing and executing this Election Agreement, Employee authorizes the Company to defer or not defer, as applicable, the issuance of the shares subject to the RSU award. Employee acknowledges that the Company has not made any representations concerning future performance of the Company's Common Stock. Further, Employee has not relied upon advice from the Company in making Employee's election. By executing this Election Agreement, the Employee hereby acknowledges his or her understanding of an agreement with all the terms and provisions set forth herein.

Employee

_____

Date:

Ascendant MDx, Inc.

By: _____

Name: _____

Title: _____

Date:

Ascendant MDx, Inc.

2011 Incentive Stock Plan

Restricted Option Grant Agreement

Exhibit B

Beneficiary Designation

Personal Information

Last _____ First _____ Middle Initial _____

Social Security Number: _____

I hereby designate the following Beneficiary(ies) to receive any benefit payable under the Plan by reason of my death, as provided in the Plan document.

Primary Beneficiary(ies):

Name	Relationship	Social Security Number	Percentage

Contingent Beneficiary(ies)

Name	Relationship	Social Security Number	Percentage

Please Sign Below

If no percentage is indicated, all beneficiaries will be deemed to have an equal interest in the benefits payable under the Plan.

_____ _____

Signature of Employee Date

SECOND AMENDED AND RESTATED PROGENITY, INC.
2012 STOCK PLAN

1. **ESTABLISHMENT, PURPOSE AND TERM OF PLAN.**

1.1 **Establishment.** The Progenity, Inc. (formerly Ascendant MDx, Inc.) 2012 Stock Plan was originally established effective as of January 1, 2012 (the "***Prior Plan***'). The Prior Plan was amended and restated effective as of June 12, 2013, the date upon which it was approved by the Board and stockholders, and was further amended and restated on August 21, 2013 to reflect the name change set forth above, such name change effective August 1, 2013, and to reflect an increased share reserve based upon a 10 for 1 stock split approved by the Board and stockholders on August 21, 2013, and is now in the form of the Second Amended and Restated Progenity, Inc. 2012 Stock Plan (the "***Plan***") set forth herein. Capitalized terms used in this Section 1 shall have the meanings set forth below in Section 2.1.

1.2 **Purpose.** The purpose of the Plan is to advance the interests of the Participating Company Group and its stockholders by providing an incentive to attract, retain and reward persons performing services for the Participating Company Group and by motivating such persons to contribute to the growth and profitability of the Participating Company Group. The Company intends that Awards granted pursuant to the Plan be exempt from or comply with Section 409A of the Code (including any amendments or replacements of such section), and the Plan shall be so construed.

1.3 **Term of Plan.** The Plan shall continue in effect until its termination by the Board; provided, however, that all Awards shall be granted, if at all, within ten (10) years from the earlier of the date the Plan is adopted by the Board or the date the Plan is duly approved by the stockholders of the Company.

2. **DEFINITIONS AND CONSTRUCTION.**

2.1 **Definitions.** Whenever used herein, the following terms shall have their respective meanings set forth below:

(a) "***Award***" means an Option, Restricted Stock Purchase Right or Restricted Stock Bonus granted under the Plan.

(b) "***Award Agreement***" means a written or electronic agreement between the Company and a Participant setting forth the terms, conditions and restrictions of the Award granted to the Participant.

(c) "***Board***" means the Board of Directors of the Company. If one or more Committees have been appointed by the Board to administer the Plan, "***Board***" also means such Committee(s).

(d) "***Cause***" means, unless such term or an equivalent term is otherwise defined with respect to an Award by the Participant's Award Agreement or written

contract of employment or service, any of the following: (i) the Participant's theft, dishonesty, willful misconduct, breach of fiduciary duty for personal profit, or falsification of any Participating Company documents or records; (ii) the Participant's material failure to abide by a Participating Company's code of conduct or other policies (including, without limitation, policies relating to confidentiality and reasonable workplace conduct); (iii) the Participant's unauthorized use, misappropriation, destruction or diversion of any tangible or intangible asset or corporate opportunity of a Participating Company (including, without limitation, the Participant's improper use or disclosure of a Participating Company's confidential or proprietary information); (iv) any intentional act by the Participant which has a material detrimental effect on a Participating Company's reputation or business; (v) the Participant's repeated failure or inability to perform any reasonable assigned duties after written notice from a Participating Company of, and a reasonable opportunity to cure, such failure or inability; (vi) any material breach by the Participant of any employment or service agreement between the Participant and a Participating Company, which breach is not cured pursuant to the terms of such agreement; or (vii) the Participant's conviction (including any plea of guilty or *nolo contendere*) of any criminal act involving fraud, dishonesty, misappropriation or moral turpitude, or which impairs the Participant's ability to perform his or her duties with a Participating Company.

(e) "***Change in Control***" means, unless such term or an equivalent term is otherwise defined with respect to an Award by the Participant's Award Agreement or written contract of employment or service, the occurrence of any of the following:

(i) an Ownership Change Event or a series of related Ownership Change Events (collectively, a "***Transaction***") in which the stockholders of the Company immediately before the Transaction do not retain immediately after the Transaction direct or indirect beneficial ownership of more than fifty percent (50%) of the total combined voting power of the outstanding securities entitled to vote generally in the election of Directors or, in the case of an Ownership Change Event described in Section 2.1(v)(iii), the entity to which the assets of the Company were transferred (the "***Transferee***"), as the case may be; or

(ii) the liquidation or dissolution of the Company.

For purposes of the preceding sentence, indirect beneficial ownership shall include, without limitation, an interest resulting from ownership of the voting securities of one or more corporations or other business entities which own the Company or the Transferee, as the case may be, either directly or through one or more subsidiary corporations or other business entities. The Board shall have the right to determine whether multiple sales or exchanges of the voting securities of the Company or multiple Ownership Change Events are related, and its determination shall be final, binding and conclusive.

(f) "***Code***" means the Internal Revenue Code of 1986, as amended, and any applicable regulations and administrative guidelines promulgated thereunder.

(g) "***Committee***" means the compensation committee or other committee or subcommittee of the Board duly appointed to administer the Plan and having such powers as shall be specified by the Board. Unless the powers of the Committee have been specifically limited, the Committee shall have all of the powers of the Board granted herein,

including, without limitation, the power to amend or terminate the Plan at any time, subject to the terms of the Plan and any applicable limitations imposed by law.

(h) "***Company***" means Progenity, Inc., a Delaware corporation, or any successor corporation thereto.

(i) "***Consultant***" means a person or entity engaged to provide consulting or advisory services (other than as an Employee or a Director) to a Participating Company, provided that (i) if the Consultant is a person, the identity of such person, the nature of such services or the entity to which such services are provided would not preclude the Company from offering or selling securities to such person pursuant to the Plan in reliance on either the exemption from registration provided by Rule 701 under the Securities Act or, if the Company is required to file reports pursuant to Section 13 or 15(d) of the Exchange Act, registration on a Form S-8 Registration Statement under the Securities Act, and (ii) if the Consultant is an entity would not preclude the Company from offering or selling securities to such an entity pursuant to the Plan in reliance on Section 4(2) of the Securities Act.

(j) "***Director***" means a member of the Board.

(k) "***Disability***" means the inability of the Participant, in the opinion of a qualified physician acceptable to the Company, to perform the major duties of the Participant's position with the Participating Company Group because of the sickness or injury of the Participant.

(l) "***Employee***" means any person treated as an employee (including an Officer or a Director who is also treated as an employee) in the records of a Participating Company and, with respect to any Incentive Stock Option granted to such person, who is an employee for purposes of Section 422 of the Code; provided, however, that neither service as a Director nor payment of a director's fee shall be sufficient to constitute employment for purposes of the Plan. The Company shall determine in good faith and in the exercise of its discretion whether an individual has become or has ceased to be an Employee and the effective date of such individual's employment or termination of employment, as the case may be. For purposes of an individual's rights, if any, under the terms of the Plan as of the time of the Company's determination of whether or not the individual is an Employee, all such determinations by the Company shall be final, binding and conclusive as to such rights, if any, notwithstanding that the Company or any court of law or governmental agency subsequently makes a contrary determination as to such individual's status as an Employee.

(m) "***Exchange Act***" means the Securities Exchange Act of 1934, as amended.

(n) "***Fair Market Value***" means, as of any date, the value of a share of Stock or other property as determined by the Board, in its discretion, or by the Company, in its discretion, if such determination is expressly allocated to the Company herein, subject to the following:

(i) If, on such date, the Stock is listed on a national or regional securities exchange or market system, the Fair Market Value of a share of Stock shall be the

closing price of a share of Stock as quoted on the national or regional securities exchange or market system constituting the primary market for the Stock, as reported in The Wall Street Journal or such other source as the Company deems reliable. If the relevant date does not fall on a day on which the Stock has traded on such securities exchange or market system, the date on which the Fair Market Value shall be established shall be the last day on which the Stock was so traded prior to the relevant date, or such other appropriate day as shall be determined by the Board, in its discretion.

(ii) If, on such date, the Stock is not listed on a national or regional securities exchange or market system, the Fair Market Value of a share of Stock shall be as determined by the Board in good faith without regard to any restriction other than a restriction which, by its terms, will never lapse, and in a manner consistent with the requirements of Section 409A of the Code.

(o) "***Incentive Stock Option***" means an Option intended to be (as set forth in the Award Agreement) and which qualifies as an incentive stock option within the meaning of Section 422(b) of the Code.

(p) "***Insider***" means an Officer, a Director or other person whose transactions in Stock are subject to Section 16 of the Exchange Act.

(q) "***Insider Trading Policy***" means the written policy of the Company pertaining to the purchase, sale, transfer or other disposition of the Company's equity securities by Directors, Officers, Employees or other service providers who may possess material, nonpublic information regarding the Company or its securities.

(r) "***Net-Exercise***" means a procedure by which the Participant will be issued a number of whole shares of Stock upon the exercise of an Option determined in accordance with the following formula:

N = X(A-B)/A, where

"N" = the number of shares of Stock to be issued to the Participant upon exercise of the Option;

"X" = the total number of shares with respect to which the Participant has elected to exercise the Option;

"A" = the Fair Market Value of one (1) share of Stock determined on the exercise date; and

"B" = the exercise price per share (as defined in the Participant's Award Agreement).

(s) "***Nonstatutory Stock Option***" means an Option not intended to be (as set forth in the Award Agreement) or which does not qualify as an Incentive Stock Option.

(t) "***Officer***" means any person designated by the Board as an officer of the Company.

(u) "***Option***" means an Incentive Stock Option or a Nonstatutory Stock Option granted pursuant to the Plan.

(v) "***Ownership Change Event***" means the occurrence of any of the following with respect to the Company: (i) the direct or indirect sale or exchange in a single or series of related transactions by the stockholders of the Company of more than fifty percent (50%) of the voting stock of the Company; (ii) a merger or consolidation in which the Company is a party; or (iii) the sale, exchange, or transfer of all or substantially all of the assets of the Company (other than a sale, exchange or transfer to one or more subsidiaries of the Company).

(w) "***Parent Corporation***" means any present or future "parent corporation" of the Company, as defined in Section 424(e) of the Code.

(x) "***Participant***" means any eligible person who has been granted one or more Awards.

(y) "***Participating Company***" means the Company or any Parent Corporation or Subsidiary Corporation.

(z) "***Participating Company Group***" means, at any point in time, all entities collectively which are then Participating Companies.

(aa) "***Restricted Stock Award***" means an Award of a Restricted Stock Bonus or a Restricted Stock Purchase Right.

(bb) "***Restricted Stock Bonus***" means Stock granted to a Participant pursuant to Section 7.

(cc) "***Restricted Stock Purchase Right***" means a right to purchase Stock granted to a Participant pursuant to Section 7.

(dd) "***Rule 16b-3***" means Rule 16b-3 under the Exchange Act, as amended from time to time, or any successor rule or regulation.

(ee) "***Securities Act***" means the Securities Act of 1933, as amended.

(ff) "***Service***" means a Participant's employment or service with the Participating Company Group, whether in the capacity of an Employee, a Director or a Consultant. Unless otherwise provided by the Board, a Participant's Service shall not be deemed to have terminated merely because of a change in the capacity in which the Participant renders such Service or a change in the Participating Company for which the Participant renders such Service, provided that there is no interruption or termination of the Participant's Service. Furthermore, a Participant's Service shall not be deemed to have terminated if the Participant takes any military leave, sick leave, or other bona fide leave of absence approved by the Company. However, unless otherwise provided by the Board, if any such leave taken by a

Participant exceeds ninety (90) days, then on the ninety-first (91st) day following the commencement of such leave the Participant's Service shall be deemed to have terminated, unless the Participant's right to return to Service is guaranteed by statute or contract. Notwithstanding the foregoing, unless otherwise established by the Company or required by law, an unpaid leave of absence shall not be treated as Service for purposes of determining vesting under the Participant's Award Agreement. Except as otherwise provided by the Board, in its discretion, the Participant's Service shall be deemed to have terminated either upon an actual termination of Service or upon the business entity for which the Participant performs Service ceasing to be a Participating Company. Subject to the foregoing, the Company, in its discretion, shall determine whether the Participant's Service has terminated and the effective date of and reason for such termination.

(gg) "***Stock***" means the common stock of the Company, as adjusted from time to time in accordance with Section 4.2.

(hh) "***Subsidiary Corporation***" means any present or future "subsidiary corporation" of the Company, as defined in Section 424(f) of the Code.

(ii) "***Ten Percent Stockholder***" means a person who, at the time an Award is granted to such person, owns stock possessing more than ten percent (10%) of the total combined voting power of all classes of stock of a Participating Company within the meaning of Section 422(b)(6) of the Code.

(jj) "***Vesting Conditions***" mean those conditions established in accordance with the Plan prior to the satisfaction of which shares subject to an Award remain subject to forfeiture or a repurchase option in favor of the Company exercisable for the Participant's monetary purchase price, if any, for such shares upon the Participant's termination of Service.

2.2 **Construction.** Captions and titles contained herein are for convenience only and shall not affect the meaning or interpretation of any provision of the Plan. Except when otherwise indicated by the context, the singular shall include the plural and the plural shall include the singular. Use of the term "or" is not intended to be exclusive, unless the context clearly requires otherwise.

3. ADMINISTRATION.

3.1 **Administration by the Board.** The Plan shall be administered by the Board. All questions of interpretation of the Plan, of any Award Agreement or of any other form of agreement or other document employed by the Company in the administration of the Plan or of any Award shall be determined by the Board, and such determinations shall be final, binding and conclusive upon all persons having an interest in the Plan or such Award, unless fraudulent or made in bad faith. Any and all actions, decisions and determinations taken or made by the Board in the exercise of its discretion pursuant to the Plan or Award Agreement or other agreement thereunder (other than determining questions of interpretation pursuant to the preceding sentence) shall be final, binding and conclusive upon all persons having an interest therein.

3.2 **Authority of Officers.** Any Officer shall have the authority to act on behalf of the Company with respect to any matter, right, obligation, determination or election which is the responsibility of or which is allocated to the Company herein, provided the Officer has apparent authority with respect to such matter, right, obligation, determination or election.

3.3 **Powers of the Board.** In addition to any other powers set forth in the Plan and subject to the provisions of the Plan, the Board shall have the full and final power and authority, in its discretion:

(a) to determine the persons to whom, and the time or times at which, Awards shall be granted and the number of shares of Stock to be subject to each Award;

(b) to determine the type of Award granted;

(c) to determine the Fair Market Value of shares of Stock or other property;

(d) to determine the terms, conditions and restrictions applicable to each Award (which need not be identical) and any shares acquired pursuant thereto, including, without limitation, (i) the exercise or purchase price of shares pursuant to any Award, (ii) the method of payment for shares purchased pursuant to any Award, (iii) the method for satisfaction of any tax withholding obligation arising in connection with any Award or shares acquired pursuant thereto, including by the withholding or delivery of shares of Stock, (iv) the timing, terms and conditions of the exercisability or vesting of any Award or shares acquired pursuant thereto, (v) the time of expiration of any Award, (vi) the effect of any Participant's termination of Service on any of the foregoing, and (vii) all other terms, conditions and restrictions applicable to any Award or shares acquired pursuant thereto not inconsistent with the terms of the Plan;

(e) to approve one or more forms of Award Agreement;

(f) to amend, modify, extend, cancel or renew any Award or to waive any restrictions or conditions applicable to any Award or any shares acquired pursuant thereto;

(g) to accelerate, continue, extend or defer the exercisability or vesting of any Award or any shares acquired pursuant thereto, including with respect to the period following a Participant's termination of Service;

(h) to prescribe, amend or rescind rules, guidelines and policies relating to the Plan, or to adopt sub-plans or supplements to, or alternative versions of, the Plan, including, without limitation, as the Board deems necessary or desirable to comply with the laws of, or to accommodate the tax policy, accounting principles or custom of, foreign jurisdictions whose citizens may be granted Awards; and

(i) to correct any defect, supply any omission or reconcile any inconsistency in the Plan or any Award Agreement and to make all other determinations and take such other actions with respect to the Plan or any Award as the Board may deem advisable to the extent not inconsistent with the provisions of the Plan or applicable law.

3.4 **Administration with Respect to Insiders.** With respect to participation by Insiders in the Plan, at any time that any class of equity security of the Company is registered pursuant to Section 12 of the Exchange Act, the Plan shall be administered in compliance with the requirements, if any, of Rule 16b-3.

3.5 **Indemnification.** In addition to such other rights of indemnification as they may have as members of the Board or as officers or employees of the Participating Company Group, members of the Board and any officers or employees of the Participating Company Group to whom authority to act for the Board or the Company is delegated shall be indemnified by the Company against all reasonable expenses, including attorneys' fees, actually and necessarily incurred in connection with the defense of any action, suit or proceeding, or in connection with any appeal therein, to which they or any of them may be a party by reason of any action taken or failure to act under or in connection with the Plan, or any right granted hereunder, and against all amounts paid by them in settlement thereof (provided such settlement is approved by independent legal counsel selected by the Company) or paid by them in satisfaction of a judgment in any such action, suit or proceeding, except in relation to matters as to which it shall be adjudged in such action, suit or proceeding that such person is liable for gross negligence, bad faith or intentional misconduct in duties; provided, however, that within sixty (60) days after the institution of such action, suit or proceeding, such person shall offer to the Company, in writing, the opportunity at its own expense to handle and defend the same.

4. SHARES SUBJECT TO PLAN.

4.1 **Maximum Number of Shares Issuable.** Subject to adjustment as provided in Section 4.2, the maximum aggregate number of shares of Stock that may be issued under the Plan shall be 30,000,000 and shall consist of authorized but unissued or reacquired shares of Stock or any combination thereof. The aggregate number of shares of Stock issued pursuant to Awards under this Plan at any time shall equal only the number of shares of Stock actually issued upon grant, exercise or settlement of an Award. If an outstanding Award for any reason expires or is terminated or canceled or if shares of Stock are acquired pursuant to an Award subject to forfeiture or repurchase and are forfeited or repurchased by the Company for an amount not greater than the Participant's exercise or purchase price, the shares of Stock allocable to the terminated portion of such Award or such forfeited or repurchased shares of Stock shall again be available for issuance under the Plan.

4.2 **Adjustments for Changes in Capital Structure.** Subject to any required action by the stockholders of the Company and the requirements of Sections 409A and 424 of the Code to the extent applicable, in the event of any change in the Stock effected without receipt of consideration by the Company, whether through merger, consolidation, reorganization, reincorporation, recapitalization, reclassification, stock dividend, stock split, reverse stock split, split-up, split-off, spin-off, combination of shares, exchange of shares, or similar change in the capital structure of the Company, or in the event of payment of a dividend or distribution to the stockholders of the Company in a form other than Stock (excepting normal cash dividends) that has a material effect on the Fair Market Value of shares of Stock, appropriate and proportionate adjustments shall be made in the number and kind of shares subject to the Plan and to any outstanding Awards, in the ISO Share Limit set forth in Section 5.3(a), and in the exercise or purchase price per share of any outstanding Awards in order to prevent dilution or enlargement

of Participants' rights under the Plan. For purposes of the foregoing, conversion of any convertible securities of the Company shall not be treated as "effected without receipt of consideration by the Company." If a majority of the shares which are of the same class as the shares that are subject to outstanding Awards are exchanged for, converted into, or otherwise become (whether or not pursuant to an Ownership Change Event) shares of another corporation (the "***New Shares***"), the Board may unilaterally amend the outstanding Awards to provide that such Awards are for New Shares. In the event of any such amendment, the number of shares subject to, and the exercise or purchase price per share of, the outstanding Awards shall be adjusted in a fair and equitable manner as determined by the Board, in its discretion. Any fractional share resulting from an adjustment pursuant to this Section shall be rounded down to the nearest whole number, and the exercise price per share shall be rounded up to the nearest whole cent. In no event may the exercise or purchase price, if any, under any Award be decreased to an amount less than the par value, if any, of the stock subject to the Award. Such adjustments shall be determined by the Board, and its determination shall be final, binding and conclusive.

5. **ELIGIBILITY AND OPTION LIMITATIONS.**

5.1 **Persons Eligible for Awards.** Awards may be granted only to Employees, Consultants and Directors.

5.2 **Participation in the Plan.** Awards are granted solely at the discretion of the Board. Eligible persons may be granted more than one Award. However, eligibility in accordance with this Section shall not entitle any person to be granted an Award, or, having been granted an Award, to be granted an additional Award.

5.3 **Incentive Stock Option Limitations.**

(a) **Maximum Number of Shares Issuable Pursuant to Incentive Stock Options.** Subject to Section 4.1 and adjustment as provided in Section 4.2, the maximum aggregate number of shares of Stock that may be issued under the Plan pursuant to the exercise of Incentive Stock Options shall not exceed 30,000,000 shares (the "***ISO Share Limit***"). The maximum aggregate number of shares of Stock that may be issued under the Plan pursuant to all Awards other than Incentive Stock Options shall be the number of shares determined in accordance with Section 4.1, subject to adjustment as provided in Section 4.2.

(b) **Persons Eligible.** An Incentive Stock Option may be granted only to a person who, on the effective date of grant, is an Employee. Any person who is not an Employee on the effective date of the grant of an Option to such person may be granted only a Nonstatutory Stock Option.

(c) **Fair Market Value Limitation.** To the extent that Options designated as Incentive Stock Options (granted under all stock plans of the Participating Company Group, including the Plan) become exercisable by a Participant for the first time during any calendar year for Stock having a Fair Market Value greater than One Hundred Thousand Dollars ($100,000), the portions of such Options which exceed such amount shall be treated as Nonstatutory Stock Options. For purposes of this Section 5.3, Options designated as

Incentive Stock Options shall be taken into account in the order in which they were granted, and the Fair Market Value of Stock shall be determined as of the time the Option with respect to such Stock is granted. If the Code is amended to provide for a limitation different from that set forth in this Section, such different limitation shall be deemed incorporated herein effective as of the date and with respect to such Options as required or permitted by such amendment to the Code. If an Option is treated as an Incentive Stock Option in part and as a Nonstatutory Stock Option in part by reason of the limitation set forth in this Section, the Participant may designate which portion of such Option the Participant is exercising. In the absence of such designation, the Participant shall be deemed to have exercised the Incentive Stock Option portion of the Option first. Upon exercise of the Option, shares of Stock issued pursuant to each such portion shall be separately identified.

6. **STOCK OPTIONS.**

Options shall be evidenced by Award Agreements specifying the number of shares of Stock covered thereby, in such form as the Board shall from time to time establish. Award Agreements shall set forth the terms and conditions upon which Stock Options may be exercised. Such Award Agreements may incorporate all or any of the terms of the Plan by reference and shall comply with and be subject to the following terms and conditions:

6.1 **Exercise Price.** The exercise price for each Option shall be established in the discretion of the Board; provided, however, that (a) the exercise price per share for an Option shall be not less than the Fair Market Value of a share of Stock on the effective date of grant of the Option and (b) no Incentive Stock Option granted to a Ten Percent Stockholder shall have an exercise price per share less than one hundred ten percent (110%) of the Fair Market Value of a share of Stock on the effective date of grant of the Option. Notwithstanding the foregoing, an Option (whether an Incentive Stock Option or a Nonstatutory Stock Option) may be granted with an exercise price lower than the minimum exercise price set forth above if such Option is granted pursuant to an assumption or substitution for another option in a manner qualifying under the provisions of Section 424(a) of the Code.

6.2 **Exercisability and Term of Options.** Options shall be exercisable at such time or times, or upon such event or events, and subject to such terms, conditions, performance criteria and restrictions as shall be determined by the Board and set forth in the Award Agreement evidencing such Option; provided, however, that (a) no Option shall be exercisable after the expiration of ten (10) years after the effective date of grant of such Option and (b) no Incentive Stock Option granted to a Ten Percent Stockholder shall be exercisable after the expiration of five (5) years after the effective date of grant of such Option. Subject to the foregoing, unless otherwise specified by the Board in the grant of an Option, any Option granted hereunder shall terminate ten (10) years after the effective date of grant of the Option, unless earlier terminated in accordance with its provisions.

6.3 **Payment of Exercise Price.**

(a) **Forms of Consideration Authorized.** Except as otherwise provided below, payment of the exercise price for the number of shares of Stock being purchased pursuant to any Option shall be made (i) in cash, by check or in cash equivalent, (ii) by tender to

the Company, or attestation to the ownership, of shares of Stock owned by the Participant having a Fair Market Value not less than the exercise price, (iii) by delivery of a properly executed notice of exercise together with irrevocable instructions to a broker providing for the assignment to the Company of the proceeds of a sale or loan with respect to some or all of the shares being acquired upon the exercise of the Option (including, without limitation, through an exercise complying with the provisions of Regulation T as promulgated from time to time by the Board of Governors of the Federal Reserve System) (a "***Cashless Exercise***"), (iv) by delivery of a properly executed notice electing a Net-Exercise, (v) by such other consideration as may be approved by the Board from time to time to the extent permitted by applicable law, or (vi) by any combination thereof. The Board may at any time or from time to time grant Options which do not permit all of the foregoing forms of consideration to be used in payment of the exercise price or which otherwise restrict one or more forms of consideration.

(b) **Limitations on Forms of Consideration.**

(i) **Tender of Stock.** Notwithstanding the foregoing, an Option may not be exercised by tender to the Company, or attestation to the ownership, of shares of Stock to the extent such tender or attestation would constitute a violation of the provisions of any law, regulation or agreement restricting the redemption of the Company's stock. Unless otherwise provided by the Board, an Option may not be exercised by tender to the Company, or attestation to the ownership, of shares of Stock unless such shares either have been owned by the Participant for more than six (6) months or such other period, if any, required by the Company (and were not used for another Option exercise by attestation during such period) or were not acquired, directly or indirectly, from the Company.

(ii) **Cashless Exercise.** The Company reserves, at any and all times, the right, in the Company's sole and absolute discretion, to establish, decline to approve or terminate any program or procedures for the exercise of Options by means of a Cashless Exercise, including with respect to one or more Participants specified by the Company notwithstanding that such program or procedures may be available to other Participants.

6.4 **Effect of Termination of Service.**

(a) **Option Exercisability.** Subject to earlier termination of the Option as otherwise provided by this Plan, an Option shall terminate immediately upon the Participant's termination of Service to the extent that it is then unvested and shall be exercisable after the Participant's termination of Service to the extent it is then vested only during the applicable time period determined in accordance with the Award Agreement evidencing the Option. To the extent required by applicable law, vested Options shall be exercisable for a minimum period of six (6) months following termination of the Participant's Service due to Disability or death and thirty (30) days following any other termination of Service (other than a termination due to Cause). Except as otherwise provided in an Award Agreement, if the Participant's Service is terminated for Cause, the Option shall terminate in its entirety and cease to be exercisable immediately upon such termination of Service. Notwithstanding the foregoing, no Option shall be exercisable later than the date of expiration of the Option's term as set forth in the Award Agreement evidencing the Option (the "***Option Expiration Date***").

(b) **Extension if Exercise Prevented by Law.** Notwithstanding the foregoing and other than with respect to a termination of Service for Cause, if the exercise of an Option within the applicable time periods set forth in the Award Agreement is prevented by the provisions of Section 11 below, the Option shall remain exercisable until the later of (i) thirty (30) days after the date such exercise first would no longer be prevented by such provisions or (ii) the end of the applicable time period set forth in the Award Agreement, but in any event no later than the Option Expiration Date.

6.5 **Transferability of Options.** During the lifetime of the Participant, an Option shall be exercisable only by the Participant or the Participant's guardian or legal representative. An Option shall not be subject in any manner to anticipation, alienation, sale, exchange, transfer, assignment, pledge, encumbrance, or garnishment by creditors of the Participant or the Participant's beneficiary, except transfer by will or by the laws of descent and distribution. Notwithstanding the foregoing, to the extent permitted by the Board, in its discretion, and set forth in the Award Agreement evidencing such Option, a Nonstatutory Stock Option shall be assignable or transferable subject to the applicable limitations, if any, described in Rule 701 under the Securities Act, and the General Instructions to the Form S-8 Registration Statement under the Securities Act.

7. RESTRICTED STOCK AWARDS.

Restricted Stock Awards shall be evidenced by Award Agreements specifying whether the Award is a Restricted Stock Bonus or a Restricted Stock Purchase Right and the number of shares of Stock subject to the Award, in such form as the Board shall from time to time establish. Award Agreements evidencing Restricted Stock Awards may incorporate all or any of the terms of the Plan by reference and shall comply with and be subject to the following terms and conditions:

7.1 **Types of Restricted Stock Awards Authorized.** Restricted Stock Awards may be granted in the form of either a Restricted Stock Bonus or a Restricted Stock Purchase Right. Restricted Stock Awards may be granted upon such conditions as the Board shall determine, including, without limitation, upon the attainment of one or more performance goals.

7.2 **Purchase Price.** The purchase price for shares of Stock issuable under each Restricted Stock Purchase Right shall be established by the Board in its discretion. No monetary payment (other than applicable tax withholding) shall be required as a condition of receiving shares of Stock pursuant to a Restricted Stock Bonus, the consideration for which shall be services actually rendered to a Participating Company or for its benefit. Notwithstanding the foregoing, if required by applicable state corporate law, the Participant shall furnish consideration in the form of cash or past services rendered to a Participating Company or for its benefit having a value not less than the par value of the shares of Stock subject to a Restricted Stock Award.

7.3 **Purchase Period.** A Restricted Stock Purchase Right shall be exercisable within a period established by the Board, which shall in no event exceed thirty (30) days from the effective date of the grant of the Restricted Stock Purchase Right.

7.4 **Payment of Purchase Price.** Except as otherwise provided below, payment of the purchase price for the number of shares of Stock being purchased pursuant to any Restricted Stock Purchase Right shall be made (a) in cash, by check or in cash equivalent, (b) by such other consideration as may be approved by the Board from time to time to the extent permitted by applicable law, or (c) by any combination thereof.

7.5 **Vesting and Restrictions on Transfer.** Shares issued pursuant to any Restricted Stock Award may (but need not) be made subject to Vesting Conditions based upon the satisfaction of such Service requirements, conditions, restrictions or performance criteria, as shall be established by the Board and set forth in the Award Agreement evidencing such Award. During any period in which shares acquired pursuant to a Restricted Stock Award remain subject to Vesting Conditions, such shares may not be sold, exchanged, transferred, pledged, assigned or otherwise disposed of other than pursuant to an Ownership Change Event or as provided in Section 7.8. The Board, in its discretion, may provide in any Award Agreement evidencing a Restricted Stock Award that, if the satisfaction of Vesting Conditions with respect to any shares subject to such Restricted Stock Award would otherwise occur on a day on which the sale of such shares would violate the provisions of the Insider Trading Policy, then satisfaction of the Vesting Conditions automatically shall be determined on the next trading day on which the sale of such shares would not violate the Insider Trading Policy. Upon request by the Company, each Participant shall execute any agreement evidencing such transfer restrictions prior to the receipt of shares of Stock hereunder and shall promptly present to the Company any and all certificates representing shares of Stock acquired hereunder for the placement on such certificates of appropriate legends evidencing any such transfer restrictions.

7.6 **Voting Rights; Dividends and Distributions.** Except as provided in this Section, Section 7.5 and any Award Agreement, during any period in which shares acquired pursuant to a Restricted Stock Award remain subject to Vesting Conditions, the Participant shall have all of the rights of a stockholder of the Company holding shares of Stock, including the right to vote such shares and to receive all dividends and other distributions paid with respect to such shares. However, in the event of a dividend or distribution paid in shares of Stock or other property or any other adjustment made upon a change in the capital structure of the Company as described in Section 4.2, any and all new, substituted or additional securities or other property (other than normal cash dividends) to which the Participant is entitled by reason of the Participant's Restricted Stock Award shall be immediately subject to the same Vesting Conditions as the shares subject to the Restricted Stock Award with respect to which such dividends or distributions were paid or adjustments were made.

7.7 **Effect of Termination of Service.** Unless otherwise provided by the Board in the Award Agreement evidencing a Restricted Stock Award, if a Participant's Service terminates for any reason, whether voluntary or involuntary (including the Participant's death or disability), then (a) the Company shall have the option to repurchase for the purchase price paid by the Participant any shares acquired by the Participant pursuant to a Restricted Stock Purchase Right which remain subject to Vesting Conditions as of the date of the Participant's termination of Service and (b) the Participant shall forfeit to the Company any shares acquired by the Participant pursuant to a Restricted Stock Bonus which remain subject to Vesting Conditions as of the date of the Participant's termination of Service. The Company shall have the right to

assign at any time any repurchase right it may have, whether or not such right is then exercisable, to one or more persons as may be selected by the Company.

7.8 **Nontransferability of Restricted Stock Award Rights.** Rights to acquire shares of Stock pursuant to a Restricted Stock Award shall not be subject in any manner to anticipation, alienation, sale, exchange, transfer, assignment, pledge, encumbrance or garnishment by creditors of the Participant or the Participant's beneficiary, except transfer by will or the laws of descent and distribution. All rights with respect to a Restricted Stock Award granted to a Participant hereunder shall be exercisable during his or her lifetime only by such Participant or the Participant's guardian or legal representative.

8. STANDARD FORMS OF AWARD AGREEMENTS.

8.1 **Award Agreements.** Each Award shall comply with and be subject to the terms and conditions set forth in the appropriate form of Award Agreement approved by the Board and as amended from time to time. No Award or purported Award shall be a valid and binding obligation of the Company unless evidenced by a fully executed Award Agreement. Any Award Agreement may consist of an appropriate form of Notice of Grant and a form of Agreement incorporated therein by reference, or such other form or forms, including electronic media, as the Board may approve from time to time.

8.2 **Authority to Vary Terms.** The Board shall have the authority from time to time to vary the terms of any standard form of Award Agreement either in connection with the grant or amendment of an individual Award or in connection with the authorization of a new standard form or forms; provided, however, that the terms and conditions of any such new, revised or amended standard form or forms of Award Agreement are not inconsistent with the terms of the Plan or applicable law.

9. CHANGE IN CONTROL.

9.1 **Effect of Change in Control on Awards.** Subject to the requirements and limitations of Section 409A of the Code, if applicable, the Board may provide for any one or more of the following:

(a) **Accelerated Vesting.** The Board may, in its discretion, provide in any Award Agreement or, in the event of a Change in Control, may take such actions as it deems appropriate to provide for the acceleration of the exercisability and/or vesting in connection with such Change in Control of each or any outstanding Award or portion thereof and shares acquired pursuant thereto upon such conditions, including termination of the Participant's Service prior to, upon, or following such Change in Control, to such extent as the Board shall determine.

(b) **Assumption, Continuation or Substitution of Awards.** In the event of a Change in Control, the surviving, continuing, successor, or purchasing corporation or other business entity or parent thereof, as the case may be (the "***Acquiror***"), may, without the consent of any Participant, assume or continue the Company's rights and obligations under each or any Award or portion thereof outstanding immediately prior to the Change in Control or substitute for each or any such outstanding Award or portion thereof a substantially equivalent award with respect to the Acquiror's stock. For purposes of this Section, if so determined by the

Board, in its discretion, an Award or any portion thereof shall be deemed assumed if, following the Change in Control, the Award confers the right to receive, subject to the terms and conditions of the Plan and the applicable Award Agreement, for each share of Stock subject to such portion of the Award immediately prior to the Change in Control, the consideration (whether stock, cash, other securities or property or a combination thereof) to which a holder of a share of Stock on the effective date of the Change in Control was entitled; provided, however, that if such consideration is not solely common stock of the Acquiror, the Board may, with the consent of the Acquiror, provide for the consideration to be received upon the exercise of the Award for each share of Stock to consist solely of common stock of the Acquiror equal in Fair Market Value to the per share consideration received by holders of Stock pursuant to the Change in Control. If any portion of such consideration may be received by holders of Stock pursuant to the Change in Control on a contingent or delayed basis, the Board may, in its discretion, determine such Fair Market Value per share as of the time of the Change in Control on the basis of the Board's good faith estimate of the present value of the probable future payment of such consideration. Except as otherwise provided in an Award Agreement, if the Acquiror does not assume or continue any Award, then any Award or portion thereof which is not assumed or continued by the Acquiror in connection with the Change in Control and which is not exercised as of the time of consummation of the Change in Control shall terminate and cease to be outstanding effective as of the time of consummation of the Change in Control. Notwithstanding the foregoing, shares acquired upon exercise of an Award prior to the Change in Control and any consideration received pursuant to the Change in Control with respect to such shares shall continue to be subject to all applicable provisions of the Award Agreement evidencing such Award except as otherwise provided in such Award Agreement.

(c) **Cash-Out of Outstanding Awards.** Notwithstanding anything in this Plan to the contrary, the Board may, in its discretion and without the consent of any Participant, determine that, upon the occurrence of a Change in Control, each or any Award or portion thereof outstanding immediately prior to the Change in Control shall be canceled in exchange for a payment with respect to each vested share (and each unvested share, if so determined by the Board) of Stock subject to such canceled Award in (i) cash, (ii) stock of the Company or of a corporation or other business entity a party to the Change in Control, or (iii) other property which, in any such case, shall be in an amount having a Fair Market Value equal to the Fair Market Value of the consideration to be paid per share of Stock in the Change in Control, reduced by the exercise or purchase price per share, if any, under such Award. If any portion of such consideration may be received by holders of Stock pursuant to the Change in Control on a contingent or delayed basis, the Board may, in its sole discretion, determine such Fair Market Value per share as of the time of the Change in Control on the basis of the Board's good faith estimate of the present value of the probable future payment of such consideration. In the event such determination is made by the Board, the amount of such payment (reduced by applicable withholding taxes, if any) shall be paid to Participants in respect of the vested portions of their canceled Awards as soon as practicable following the date of the Change in Control and in respect of the unvested portions of their canceled Awards in accordance with the vesting schedules applicable to such Awards.

9.2 **Federal Excise Tax Under Section 4999 of the Code.**

(a) If at any time or from time to time, it shall be determined by independent tax professionals selected by the Company ("Tax Professional") that any acceleration of vesting pursuant to an Award and any other payment or benefit received or to be received by a Participant, whether or not pursuant to an Award granted under the Plan, would subject the Participant to any excise tax pursuant to Section 4999 of the Code (or any similar tax payable under any state, local, foreign or other law, but expressly excluding any income taxes and penalties or interest imposed pursuant to Section 409A of the Code ("Excise Taxes"), due to the characterization of such acceleration of vesting, payment or benefit as an "excess parachute payment" under Section 280G of the Code ("Potential Parachute Payment"), then Participant's Potential Parachute Payment shall be either (a) provided to Executive in full, or (b) provided to Participant as to such lesser extent which would result in no portion of such benefits being subject to the Excise Taxes, whichever of the foregoing amounts, after taking into account applicable federal, state, local and foreign income and employment taxes, the Excise Tax, and any other applicable taxes, results in the receipt by Participant, on an after-tax basis, of the greatest amount of benefits, notwithstanding that all or some portion of such benefits may be taxable under the Excise Taxes ("Payments").

(b) Implementation of Any Benefit Reduction. In the event of a reduction of benefits pursuant to paragraph 9.2(a), the Tax Professional shall determine which benefits shall be reduced so as to achieve the principle set forth in paragraph 9.2(a). For purposes of making the calculations required by paragraph 9.2(a), the Tax Professional may make reasonable assumptions and approximations concerning applicable taxes and may rely on reasonable, good faith interpretations concerning the application of the Code and other applicable legal authority. The Company and the Participant shall furnish to the Tax Professional such information and documents as the Tax Professional may reasonably request in order to make a determination under paragraph 9.2(a). The Company shall bear all costs the Tax Professional may reasonably incur in connection with any calculations contemplated by paragraph 9.2(a).

(c) Potential Subsequent Adjustments.

(i) If, notwithstanding any calculations performed or reduction in benefits imposed as described in paragraph 9.2(a), the IRS determines that Participant is liable for Excise Taxes as a result of the receipt of any payments characterized as "parachute payments" within the meaning of Section 280G of the Code, then the Participant shall be obligated to pay back to the Company, within thirty (30) days after a final IRS determination or in the event that the Participant challenges the final IRS determination, a final judicial determination, a portion of the Payments equal to the "Repayment Amount." The Repayment Amount shall be the smallest such amount, if any, as shall be required to be paid to the Company so that the Participant's net after-tax proceeds with respect to the Payments (after taking into account the payment of the Excise Taxes and all other applicable taxes imposed on such benefits) shall be maximized. The Repayment Amount shall be zero if a Repayment Amount of more than zero would not result in Executive's net after-tax proceeds with respect to the Payments being maximized. If the Excise Taxes are not eliminated pursuant to this paragraph 9.2(c), Executive shall pay the Excise Taxes.

(ii) Notwithstanding any other provision of this Section 9.2, if (A) there is a reduction in the payments to the Participant as described above in this Section 9.2, (B) the IRS later determines that the Participant is liable for Excise Taxes, the payment of which would result in the maximization of the Participant's net after-tax proceeds (calculated based on the full amount of the Participant's parachute payments and as if the Participant's benefits had not previously been reduced), and (C) the Participant pays the Excise Tax, then the Company shall pay to the Participant those payments which were reduced pursuant to the application of the previous provisions of this Section 9.2 as soon as administratively possible after the Participant pays the Excise Taxes to the extent that the Participant's net after-tax proceeds with respect to the payment of the Payments are maximized.

10. TAX WITHHOLDING.

10.1 **Tax Withholding in General.** The Company shall have the right to deduct from any and all payments made under the Plan, or to require the Participant, through payroll withholding, cash payment or otherwise, including by means of a Cashless Exercise of an Option, to make adequate provision for, the federal, state, local and foreign taxes (including any social insurance tax), if any, required by law to be withheld by the Participating Company Group with respect to an Award or the shares acquired pursuant thereto. The Company shall have no obligation to deliver shares of Stock or to release shares of Stock from an escrow established pursuant to an Award Agreement until the Participating Company Group's tax withholding obligations have been satisfied by the Participant.

10.2 **Withholding in Shares.** The Company shall have the right, but not the obligation, to deduct from the shares of Stock issuable to a Participant upon the exercise of an Award, or to accept from the Participant the tender of, a number of whole shares of Stock having a Fair Market Value, as determined by the Company, equal to all or any part of the tax withholding obligations of the Participating Company Group. The Fair Market Value of any shares of Stock withheld or tendered to satisfy any such tax withholding obligations shall not exceed the amount determined by the applicable minimum statutory withholding rates.

11. COMPLIANCE WITH SECURITIES LAW.

The grant of Awards and the issuance of shares of Stock pursuant to any Award shall be subject to compliance with all applicable requirements of federal, state and foreign law with respect to such securities and the requirements of any stock exchange or market system upon which the Stock may then be listed. In addition, no Award may be exercised or shares issued pursuant to an Award unless (a) a registration statement under the Securities Act shall at the time of such exercise or issuance be in effect with respect to the shares issuable pursuant to the Award or (b) in the opinion of legal counsel to the Company, the shares issuable pursuant to the Award may be issued in accordance with the terms of an applicable exemption from the registration requirements of the Securities Act. The inability of the Company to obtain from any regulatory body having jurisdiction the authority, if any, deemed by the Company's legal counsel to be necessary to the lawful issuance and sale of any shares hereunder shall relieve the Company of any liability in respect of the failure to issue or sell such shares as to which such requisite authority shall not have been obtained. As a condition to issuance of any Stock, the Company may require the Participant to satisfy any qualifications that may be necessary or

appropriate, to evidence compliance with any applicable law or regulation and to make any representation or warranty with respect thereto as may be requested by the Company.

12. **AMENDMENT OR TERMINATION OF PLAN.**

The Board may amend, suspend or terminate the Plan at any time. However, without the approval of the Company's stockholders, there shall be (a) no increase in the maximum aggregate number of shares of Stock that may be issued under the Plan (except by operation of the provisions of Section 4.2), (b) no change in the class of persons eligible to receive Incentive Stock Options, and (c) no other amendment of the Plan that would require approval of the Company's stockholders under any applicable law, regulation or rule, including the rules of any stock exchange or market system upon which the Stock may then be listed. No amendment, suspension or termination of the Plan shall affect any then outstanding Award unless expressly provided by the Board. Except as provided by the next sentence, no amendment, suspension or termination of the Plan may materially adversely affect any then outstanding Award without the consent of the Participant. Notwithstanding any other provision of the Plan or any Award Agreement to the contrary, the Board may, in its sole and absolute discretion and without the consent of any Participant, amend the Plan or any Award Agreement, to take effect retroactively or otherwise, as it deems necessary or advisable for the purpose of conforming the Plan or such Award Agreement to any present or future law, regulation or rule applicable to the Plan, including, but not limited to, Section 409A of the Code.

13. **MISCELLANEOUS PROVISIONS.**

13.1 **Repurchase Rights.** Shares of Stock issued under the Plan may be subject to a right of first refusal, one or more repurchase options, or other conditions and restrictions as determined by the Board in its discretion at the time the Award is granted. The Company shall have the right to assign at any time any repurchase right or other right that it may have with respect to a share of Stock issued under the Plan, whether or not such right is then exercisable, to one or more persons as may be selected by the Company. Upon request by the Company, each Participant shall execute any agreement evidencing such transfer restrictions prior to the issuance of shares of Stock hereunder and shall promptly present to the Company any and all certificates representing shares of Stock acquired hereunder for the placement on such certificates of appropriate legends evidencing any such transfer restrictions. To the extent required by any agreement of stockholders or other agreement to which the Company is or may become subject, persons acquiring shares of Stock issued under the Plan will be required to enter into such agreement upon acquiring such shares of Stock.

13.2 **Provision of Information.** At least annually, copies of the Company's balance sheet and income statement for the just completed fiscal year shall be made available to each Participant and purchaser of shares of Stock upon the exercise of an Award; provided, however, that this requirement shall not apply if all offers and sales of securities pursuant to the Plan comply with all applicable conditions of Rule 701 under the Securities Act. The Company shall not be required to provide such information to key persons whose duties in connection with the Company assure them access to equivalent information. The Company shall deliver to each Participant such disclosures as are required in accordance with Rule 701 under the Securities Act.

13.3 **Rights as Employee, Consultant or Director.** No person, even though eligible pursuant to Section 5, shall have a right to be selected as a Participant, or, having been so selected, to be selected again as a Participant. Nothing in the Plan or any Award granted under the Plan shall confer on any Participant a right to remain an Employee, Consultant or Director or interfere with or limit in any way any right of a Participating Company to terminate the Participant's Service at any time. To the extent that an Employee of a Participating Company other than the Company, receives an Award under the Plan, that Award shall in no event be understood or interpreted to mean that the Company is the Employee's employer or that the Employee has an employment relationship with the Company.

13.4 **Rights as a Stockholder.** A Participant shall have no rights as a stockholder with respect to any shares covered by an Award until the date of the issuance of such shares (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company). No adjustment shall be made for dividends, distributions or other rights for which the record date is prior to the date such shares are issued, except as provided in Section 4.2 or another provision of the Plan.

13.5 **Delivery of Title to Shares.** Subject to any governing rules or regulations, the Company shall issue or cause to be issued the shares of Stock acquired pursuant to an Award and shall deliver such shares to or for the benefit of the Participant by means of one or more of the following: (a) by delivering to the Participant evidence of book entry shares of Stock credited to the account of the Participant, (b) by depositing such shares of Stock for the benefit of the Participant with any broker with which the Participant has an account relationship, (c) by delivering such shares of Stock to the Participant in certificate form, or (d) by delivering such shares to an escrow agent who shall hold such shares in accordance with the terms of a form of escrow agreement established by the Company in order to ensure compliance with the terms of the Plan, the Award Agreement under which the right to receive such shares of Stock were granted, and any other conditions, restrictions or terms of other agreement to which such shares of Stock are subject upon their issuance.

13.6 **Fractional Shares.** The Company shall not be required to issue fractional shares upon the exercise or settlement of any Award.

13.7 **Retirement and Welfare Plans.** Neither Awards made under this Plan nor shares of Stock or cash paid pursuant to such Awards shall be included as "compensation" for purposes of computing the benefits payable to any Participant under any Participating Company's retirement plans (both qualified and non-qualified) or welfare benefit plans unless such other plan expressly provides that such compensation shall be taken into account in computing such benefits.

13.8 **Severability.** If any one or more of the provisions (or any part thereof) of this Plan shall be held invalid, illegal or unenforceable in any respect, such provision shall be modified so as to make it valid, legal and enforceable, and the validity, legality and enforceability of the remaining provisions (or any part thereof) of the Plan shall not in any way be affected or impaired thereby.

13.9 **No Constraint on Corporate Action.** Nothing in this Plan shall be construed to: (a) limit, impair, or otherwise affect the Company's or another Participating Company's right or power to make adjustments, reclassifications, reorganizations, or changes of its capital or business structure, or to merge or consolidate, or dissolve, liquidate, sell, or transfer all or any part of its business or assets; or (b) limit the right or power of the Company or another Participating Company to take any action which such entity deems to be necessary or appropriate.

13.10 **Choice of Law.** Except to the extent governed by applicable federal law, the validity, interpretation, construction and performance of the Plan and each Award Agreement shall be governed by the laws of the State of California, without regard to its conflict of law rules.

13.11 **Stockholder Approval.** The Plan or any increase in the maximum aggregate number of shares of Stock issuable thereunder as provided in Section 4.1 (the "***Authorized Shares***") shall be approved by a majority of the outstanding securities of the Company entitled to vote by the later of (a) a period beginning twelve (12) months before and ending twelve (12) months after the date of adoption thereof by the Board or (b) the first issuance of any security pursuant to the Plan in the State of California (within the meaning of Section 25008 of the California Corporations Code). Awards granted prior to security holder approval of the Plan or in excess of the Authorized Shares previously approved by the security holders shall become exercisable no earlier than the date of security holder approval of the Plan or such increase in the Authorized Shares, as the case may be, and such Awards shall be rescinded if such security holder approval is not received in the manner described in the preceding sentence.

PLAN HISTORY

February 23, 2012	Board adopts Ascendant MDx, Inc. 2012 Stock Plan, with an initial reserve of 1,250,000 shares.
February 23, 2012	Stockholders of the Company approve Ascendant MDx, Inc. 2012 Stock Plan.
June 12, 2013	Board adopts Amended and Restated Ascendant MDx, Inc. 2012 Stock Plan with a reserve of 3,000,000 shares.
June 12, 2013	Stockholders of the Company approve Amended and Restated Ascendant MDx, Inc. 2012 Stock Plan.
August 21, 2013	Board and Stockholders adopt and approve a 10 for 1 stock split (and corresponding Second Amended and Restated Progenity, Inc. 2012 Stock Plan with a reserve of 30,000,0000 shares, reflecting the stock split)

Exhibit 10.4

PROGENITY, INC. 2015 CONSULTANT STOCK PLAN

1. ESTABLISHMENT, PURPOSE AND TERM OF PLAN.

1.1 **Establishment.** The Progenity, Inc. 2015 Consultant Stock Plan (the "***Plan***") is hereby established effective as of June 8, 2015. Capitalized terms used in this Section 1 shall have the meanings set forth below in Section 2.1.

1.2 **Purpose.** The purpose of the Plan is to advance the interests of the Participating Company Group and its stockholders by providing an incentive to attract, retain and reward individual consultants performing services for the Participating Company Group and by motivating such persons to contribute to the growth and profitability of the Participating Company Group. The Company intends that Awards granted pursuant to the Plan be exempt from or comply with Section 409A of the Code (including any amendments or replacements of such section), and the Plan shall be so construed.

1.3 **Term of Plan.** The Plan shall continue in effect until its termination by the Board.

2. DEFINITIONS AND CONSTRUCTION.

2.1 **Definitions.** Whenever used herein, the following terms shall have their respective meanings set forth below:

(a) "***Accredited Investor***" has the meaning defined in Rule 501 of Regulation D promulgated under the Securities Act.

(b) "***Award***" means an Option, Restricted Stock Purchase Right or Restricted Stock Bonus granted under the Plan.

(c) "***Award Agreement***" means a written or electronic agreement between the Company and a Participant setting forth the terms, conditions and restrictions of the Award granted to the Participant.

(d) "***Board***" means the Board of Directors of the Company. If one or more Committees have been appointed by the Board to administer the Plan, "***Board***" also means such Committee(s).

(e) "***Cause***" means, unless such term or an equivalent term is otherwise defined with respect to an Award by the Participant's Award Agreement or written contract of employment or service, any of the following: (i) the Participant's theft, dishonesty, willful misconduct, breach of fiduciary duty for personal profit, or falsification of any documents or records of any Participating Company or an Engaging Company; (ii) the Participant's material failure to abide by an Engaging Company's code of conduct or other policies (including, without limitation, policies relating to confidentiality and reasonable workplace conduct); (iii) the Participant's unauthorized use, misappropriation, destruction or diversion of any tangible or intangible asset or corporate opportunity of an Engaging Company or a Participating Company

(including, without limitation, the Participant's improper use or disclosure of an Engaging Company or a Participating Company's confidential or proprietary information); (iv) any intentional act by the Participant which has a material detrimental effect on an Engaging Company or a Participating Company's reputation or business; (v) the Participant's repeated failure or inability to perform any reasonable assigned duties after written notice from an Engaging Company of, and a reasonable opportunity to cure, such failure or inability; (vi) any material breach by the Participant of any employment or service agreement between the Participant and an Engaging Company or an Engaging Company and a Participating Company, which breach is not cured pursuant to the terms of such agreement; or (vii) the Participant's conviction (including any plea of guilty or *nolo contendere*) of any criminal act involving fraud, dishonesty, misappropriation or moral turpitude, or which impairs the Participant's ability to perform his or her duties with an Engaging Company or to any Participating Company.

(f) "***Change in Control***" means, unless such term or an equivalent term is otherwise defined with respect to an Award by the Participant's Award Agreement or written contract of employment or service, the occurrence of any of the following:

(i) an Ownership Change Event or a series of related Ownership Change Events (collectively, a "***Transaction***") in which the stockholders of the Company immediately before the Transaction do not retain immediately after the Transaction direct or indirect beneficial ownership of more than fifty percent (50%) of the total combined voting power of the outstanding securities entitled to vote generally in the election of Directors or, in the case of an Ownership Change Event described in Section 2.1(v)(iii), the entity to which the assets of the Company were transferred (the "***Transferee***"), as the case may be; or

(ii) the liquidation or dissolution of the Company.

For purposes of the preceding sentence, indirect beneficial ownership shall include, without limitation, an interest resulting from ownership of the voting securities of one or more corporations or other business entities which own the Company or the Transferee, as the case may be, either directly or through one or more subsidiary corporations or other business entities. The Board shall have the right to determine whether multiple sales or exchanges of the voting securities of the Company or multiple Ownership Change Events are related, and its determination shall be final, binding and conclusive.

(g) "***Code***" means the Internal Revenue Code of 1986, as amended, and any applicable regulations and administrative guidelines promulgated thereunder.

(h) "***Committee***" means the compensation committee or other committee or subcommittee of the Board duly appointed to administer the Plan and having such powers as shall be specified by the Board. Unless the powers of the Committee have been specifically limited, the Committee shall have all of the powers of the Board granted herein, including, without limitation, the power to amend or terminate the Plan at any time, subject to the terms of the Plan and any applicable limitations imposed by law.

(i) "***Company***" means Progenity, Inc., a Delaware corporation, or any successor corporation thereto.

(j) "***Consultant***" means a person engaged to provide consulting or advisory services (other than as an Employee or a Director) to a Participating Company, or to provide services as an employee to an Engaging Company. The Company shall determine in good faith and in the exercise of its discretion whether an individual has become or has ceased to be a Consultant and the effective date thereof. For purposes of an individual's rights, if any, under the terms of the Plan as of the time of the Company's determination of whether or not the individual is a Consultant, all such determinations by the Company shall be final, binding and conclusive as to such rights, if any.

(k) "***Director***" means a member of the Board.

(l) "***Disability***" means the inability of the Participant, in the opinion of a qualified physician acceptable to the Company, to perform the major duties of the Participant's position with the Engaging Company or to a Participating Company Group because of the sickness or injury of the Participant.

(m) "***Employee***" means any person treated as an employee (including an Officer or a Director who is also treated as an employee) in the records of a Participating Company; provided, however, that neither service as a Director nor payment of a director's fee shall be sufficient to constitute employment for purposes of the Plan. The Company shall determine in good faith and in the exercise of its discretion whether an individual has become or has ceased to be an Employee (including any change in status from a Consultant to Employee) and the effective date of such individual's employment or termination of employment, as the case may be. For purposes of an individual's rights, if any, under the terms of the Plan as of the time of the Company's determination of whether or not the individual is an Employee, all such determinations by the Company shall be final, binding and conclusive as to such rights, if any, notwithstanding that the Company or any court of law or governmental agency subsequently makes a contrary determination as to such individual's status as an Employee.

(n) "***Engaging Company***" means any entity (i) for which a Participant is treated as an employee in the records of such entity, and (ii) that has an agreement with a Participating Company to provide services to the Participating Company (an "***Engaging Company Service Agreement***").

(o) "***Exchange Act***" means the Securities Exchange Act of 1934, as amended.

(p) "***Fair Market Value***" means, as of any date, the value of a share of Stock or other property as determined by the Board, in its discretion, or by the Company, in its discretion, if such determination is expressly allocated to the Company herein, subject to the following:

(i) If, on such date, the Stock is listed on a national or regional securities exchange or market system, the Fair Market Value of a share of Stock shall be the closing price of a share of Stock as quoted on the national or regional securities exchange or market system constituting the primary market for the Stock, as reported in The Wall Street Journal or such other source as the Company deems reliable. If the relevant date does not fall on a day on which the

Stock has traded on such securities exchange or market system, the date on which the Fair Market Value shall be established shall be the last day on which the Stock was so traded prior to the relevant date, or such other appropriate day as shall be determined by the Board, in its discretion.

(ii) If, on such date, the Stock is not listed on a national or regional securities exchange or market system, the Fair Market Value of a share of Stock shall be as determined by the Board in good faith without regard to any restriction other than a restriction which, by its terms, will never lapse, and in a manner consistent with the requirements of Section 409A of the Code.

(q) "***Insider***" means an Officer, a Director or other person whose transactions in Stock are subject to Section 16 of the Exchange Act.

(r) "***Insider Trading Policy***" means the written policy of the Company pertaining to the purchase, sale, transfer or other disposition of the Company's equity securities by Directors, Officers, Employees or other service providers who may possess material, nonpublic information regarding the Company or its securities.

(s) "***Net-Exercise***" means a procedure by which the Participant will be issued a number of whole shares of Stock upon the exercise of an Option determined in accordance with the following formula:

N = X(A-B)/A, where

"N" = the number of shares of Stock to be issued to the Participant upon exercise of the Option;

"X" = the total number of shares with respect to which the Participant has elected to exercise the Option;

"A" = the Fair Market Value of one (1) share of Stock determined on the exercise date; and

"B" = the exercise price per share (as defined in the Participant's Award Agreement).

(t) "***Officer***" means any person designated by the Board as an officer of the Company.

(u) "***Option***" means an option granted pursuant to the Plan, which options may not be incentive stock options as defined under Section 422 of the Code.

(v) "***Ownership Change Event***" means the occurrence of any of the following with respect to the Company: (i) the direct or indirect sale or exchange in a single or series of related transactions by the stockholders of the Company of more than fifty percent (50%) of the voting stock of the Company; (ii) a merger or consolidation in which the Company is a party; or (iii) the sale, exchange, or transfer of all or substantially all of the assets of the Company (other than a sale, exchange or transfer to one or more subsidiaries of the Company).

(w) "***Parent Corporation***" means any present or future "parent corporation" of the Company, as defined in Section 424(e) of the Code.

(x) "***Participant***" means any eligible person who has been granted one or more Awards.

(y) "***Participating Company***" means the Company or any Parent Corporation or Subsidiary Corporation.

(z) "***Participating Company Group***" means, at any point in time, all entities collectively which are then Participating Companies.

(aa) "***Restricted Stock Award***" means an Award of a Restricted Stock Bonus or a Restricted Stock Purchase Right.

(bb) "***Restricted Stock Bonus***" means Stock granted to a Participant pursuant to Section 7.

(cc) "***Restricted Stock Purchase Right***" means a right to purchase Stock granted to a Participant pursuant to Section 7.

(dd) "***Rule 16b-3***" means Rule 16b-3 under the Exchange Act, as amended from time to time, or any successor rule or regulation.

(ee) "***Securities Act***" means the Securities Act of 1933, as amended.

(ff) "***Service***" means a Participant's employment or service with the Participating Company Group, whether in the capacity of an Employee, a Director or a Consultant, or employment with an Engaging Company. Unless otherwise provided by the Board, a Participant's Service shall not be deemed to have terminated merely because of a change in the capacity in which the Participant renders such Service or a change in the Participating Company for which the Participant renders such Service or a change from providing service as an employee of an Engaging Company to employment or service with a Participating Company, provided that there is no interruption or termination of the Participant's Service. Furthermore, a Participant's Service shall not be deemed to have terminated if the Participant takes any military leave, sick leave, or other bona fide leave of absence approved by the Company. However, unless otherwise provided by the Board, if any such leave taken by a Participant exceeds ninety (90) days, then on the ninety-first (91st) day following the commencement of such leave the Participant's Service shall be deemed to have terminated, unless the Participant's right to return to Service is guaranteed by statute or contract. Unless a Participant concurrently becomes an Employee or Director, any termination of an Engaging Company Service Agreement, for any reason, or no reason, or a Participant's termination of employment with the Engaging Company, shall be a termination of Service. Notwithstanding the foregoing, unless otherwise established by the Company or required by law, an unpaid leave of absence shall not be treated as Service for purposes of determining vesting under the Participant's Award Agreement. Except as otherwise provided by the Board, in its discretion, the Participant's Service shall be deemed to have terminated either upon an actual termination of Service or upon the business entity for which the Participant performs Service ceasing to be a Participating Company. Subject to the foregoing, the Company, in its discretion,

shall determine whether the Participant's Service has terminated and the effective date of and reason for such termination.

(gg) "***Stock***" means the common stock of the Company, as adjusted from time to time in accordance with Section 4.2.

(hh) "***Subsidiary Corporation***" means any present or future "subsidiary corporation" of the Company, as defined in Section 424(f) of the Code.

(ii) "***Vesting Conditions***" mean those conditions established in accordance with the Plan prior to the satisfaction of which shares subject to an Award remain subject to forfeiture or a repurchase option in favor of the Company exercisable for the Participant's monetary purchase price, if any, for such shares upon the Participant's termination of Service.

2.2 **Construction.** Captions and titles contained herein are for convenience only and shall not affect the meaning or interpretation of any provision of the Plan. Except when otherwise indicated by the context, the singular shall include the plural and the plural shall include the singular. Use of the term "or" is not intended to be exclusive, unless the context clearly requires otherwise.

3. ADMINISTRATION.

3.1 **Administration by the Board.** The Plan shall be administered by the Board. All questions of interpretation of the Plan, of any Award Agreement or of any other form of agreement or other document employed by the Company in the administration of the Plan or of any Award shall be determined by the Board, and such determinations shall be final, binding and conclusive upon all persons having an interest in the Plan or such Award, unless fraudulent or made in bad faith. Any and all actions, decisions and determinations taken or made by the Board in the exercise of its discretion pursuant to the Plan or Award Agreement or other agreement thereunder (other than determining questions of interpretation pursuant to the preceding sentence) shall be final, binding and conclusive upon all persons having an interest therein.

3.2 **Authority of Officers.** Any Officer shall have the authority to act on behalf of the Company with respect to any matter, right, obligation, determination or election which is the responsibility of or which is allocated to the Company herein, provided the Officer has apparent authority with respect to such matter, right, obligation, determination or election.

3.3 **Powers of the Board.** In addition to any other powers set forth in the Plan and subject to the provisions of the Plan, the Board shall have the full and final power and authority, in its discretion:

(a) to determine the persons to whom, and the time or times at which, Awards shall be granted and the number of shares of Stock to be subject to each Award;

(b) to determine the type of Award granted;

(c) to determine the Fair Market Value of shares of Stock or other property;

(d) to determine the terms, conditions and restrictions applicable to each Award (which need not be identical) and any shares acquired pursuant thereto, including, without limitation, (i) the exercise or purchase price of shares pursuant to any Award, (ii) the method of payment for shares purchased pursuant to any Award, (iii) the method for satisfaction of any tax withholding obligation arising in connection with any Award or shares acquired pursuant thereto, including by the withholding or delivery of shares of Stock, (iv) the timing, terms and conditions of the exercisability or vesting of any Award or shares acquired pursuant thereto, (v) the time of expiration of any Award, (vi) the effect of any Participant's termination of Service on any of the foregoing, and (vii) all other terms, conditions and restrictions applicable to any Award or shares acquired pursuant thereto not inconsistent with the terms of the Plan;

(e) to approve one or more forms of Award Agreement;

(f) to amend, modify, extend, cancel or renew any Award or to waive any restrictions or conditions applicable to any Award or any shares acquired pursuant thereto;

(g) to accelerate, continue, extend or defer the exercisability or vesting of any Award or any shares acquired pursuant thereto, including with respect to the period following a Participant's termination of Service;

(h) to prescribe, amend or rescind rules, guidelines and policies relating to the Plan, or to adopt sub-plans or supplements to, or alternative versions of, the Plan, including, without limitation, as the Board deems necessary or desirable to comply with the laws of, or to accommodate the tax policy, accounting principles or custom of, foreign jurisdictions whose citizens may be granted Awards; and

(i) to correct any defect, supply any omission or reconcile any inconsistency in the Plan or any Award Agreement and to make all other determinations and take such other actions with respect to the Plan or any Award as the Board may deem advisable to the extent not inconsistent with the provisions of the Plan or applicable law.

3.4 **Administration with Respect to Insiders.** With respect to participation by Insiders in the Plan, at any time that any class of equity security of the Company is registered pursuant to Section 12 of the Exchange Act, the Plan shall be administered in compliance with the requirements, if any, of Rule 16b-3.

3.5 **Indemnification.** In addition to such other rights of indemnification as they may have as members of the Board or as officers or employees of the Participating Company Group, members of the Board and any officers or employees of the Participating Company Group to whom authority to act for the Board or the Company is delegated shall be indemnified by the Company against all reasonable expenses, including attorneys' fees, actually and necessarily incurred in connection with the defense of any action, suit or proceeding, or in connection with any appeal therein, to which they or any of them may be a party by reason of any action taken or failure to act under or in connection with the Plan, or any right granted hereunder, and against all amounts paid by them in settlement thereof (provided such settlement is approved by independent

legal counsel selected by the Company) or paid by them in satisfaction of a judgment in any such action, suit or proceeding, except in relation to matters as to which it shall be adjudged in such action, suit or proceeding that such person is liable for gross negligence, bad faith or intentional misconduct in duties; provided, however, that within sixty (60) days after the institution of such action, suit or proceeding, such person shall offer to the Company, in writing, the opportunity at its own expense to handle and defend the same.

4. SHARES SUBJECT TO PLAN.

4.1 **Maximum Number of Shares Issuable.** Subject to adjustment as provided in Section 4.2, the maximum aggregate number of shares of Stock that may be issued under the Plan shall be 3,000,000 and shall consist of authorized but unissued or reacquired shares of Stock or any combination thereof. The aggregate number of shares of Stock issued pursuant to Awards under the Plan at any time shall equal only the number of shares of Stock actually issued upon grant, exercise or settlement of an Award. If an outstanding Award for any reason expires or is terminated or canceled or if shares of Stock are acquired pursuant to an Award subject to forfeiture or repurchase and are forfeited or repurchased by the Company for an amount not greater than the Participant's exercise or purchase price, the shares of Stock allocable to the terminated portion of such Award or such forfeited or repurchased shares of Stock shall again be available for issuance under the Plan.

4.2 **Adjustments for Changes in Capital Structure.** Subject to any required action by the stockholders of the Company and the requirements of Sections 409A and 424 of the Code to the extent applicable, in the event of any change in the Stock effected without receipt of consideration by the Company, whether through merger, consolidation, reorganization, reincorporation, recapitalization, reclassification, stock dividend, stock split, reverse stock split, split-up, split-off, spin-off, combination of shares, exchange of shares, or similar change in the capital structure of the Company, or in the event of payment of a dividend or distribution to the stockholders of the Company in a form other than Stock (excepting normal cash dividends) that has a material effect on the Fair Market Value of shares of Stock, appropriate and proportionate adjustments shall be made in the number and kind of shares subject to the Plan and to any outstanding Awards, and in the exercise or purchase price per share of any outstanding Awards in order to prevent dilution or enlargement of Participants' rights under the Plan. For purposes of the foregoing, conversion of any convertible securities of the Company shall not be treated as "effected without receipt of consideration by the Company." If a majority of the shares which are of the same class as the shares that are subject to outstanding Awards are exchanged for, converted into, or otherwise become (whether or not pursuant to an Ownership Change Event) shares of another corporation (the "***New Shares***"), the Board may unilaterally amend the outstanding Awards to provide that such Awards are for New Shares. In the event of any such amendment, the number of shares subject to, and the exercise or purchase price per share of, the outstanding Awards shall be adjusted in a fair and equitable manner as determined by the Board, in its discretion. Any fractional share resulting from an adjustment pursuant to this Section shall be rounded down to the nearest whole number, and the exercise price per share shall be rounded up to the nearest whole cent. In no event may the exercise or purchase price, if any, under any Award be decreased to an amount less than the par value, if any, of the stock subject to the Award. Such adjustments shall be determined by the Board, and its determination shall be final, binding and conclusive.

5. **ELIGIBILITY.**

5.1 **Persons Eligible for Awards.** Awards may be granted only to Consultants; provided, however that each Consultant who receives an Award under the Plan must qualify as an Accredited Investor at the time of grant (the "***Accredited Investor Requirement***").

5.2 **Participation in the Plan.** Awards are granted solely at the discretion of the Board. Eligible persons may be granted more than one Award. However, eligibility in accordance with this Section shall not entitle any person to be granted an Award, or, having been granted an Award, to be granted an additional Award.

6. **STOCK OPTIONS.**

Options shall be evidenced by Award Agreements specifying the number of shares of Stock covered thereby, in such form as the Board shall from time to time establish. Award Agreements shall set forth the terms and conditions upon which Stock Options may be exercised. Such Award Agreements may incorporate all or any of the terms of the Plan by reference and shall comply with and be subject to the following terms and conditions:

6.1 **Exercise Price.** The exercise price for each Option shall be established in the discretion of the Board; provided, however, that the exercise price per share for an Option shall be not less than the Fair Market Value of a share of Stock on the effective date of grant of the Option Notwithstanding the foregoing, an Option may be granted with an exercise price lower than the minimum exercise price set forth above if such Option is granted pursuant to an assumption or substitution for another option in a manner qualifying under the provisions of Section 409A of the Code.

6.2 **Exercisability and Term of Options.** Options shall be exercisable at such time or times, or upon such event or events, and subject to such terms, conditions, performance criteria and restrictions as shall be determined by the Board and set forth in the Award Agreement evidencing such Option; provided, however, that no Option shall be exercisable after the expiration of ten (10) years after the effective date of grant of such Option. Subject to the foregoing, unless otherwise specified by the Board in the grant of an Option, any Option granted hereunder shall terminate ten (10) years after the effective date of grant of the Option, unless earlier terminated in accordance with its provisions.

6.3 **Payment of Exercise Price.**

(a) **Forms of Consideration Authorized.** Except as otherwise provided below, payment of the exercise price for the number of shares of Stock being purchased pursuant to any Option shall be made (i) in cash, by check or in cash equivalent, (ii) by tender to the Company, or attestation to the ownership, of shares of Stock owned by the Participant having a Fair Market Value not less than the exercise price, (iii) to the extent permitted under applicable securities laws, as determined by the Board or its legal counsel, by delivery of a properly executed notice of exercise together with irrevocable instructions to a broker providing for the assignment to the Company of the proceeds of a sale or loan with respect to some or all of the shares being acquired upon the exercise of the Option (including, without limitation, through an exercise complying with the provisions of Regulation T as promulgated from time to time by the Board of

Governors of the Federal Reserve System) (a "***Cashless Exercise***"), (iv) by delivery of a properly executed notice electing a Net-Exercise, (v) by such other consideration as may be approved by the Board from time to time to the extent permitted by applicable law, or (vi) by any combination thereof. The Board may at any time or from time to time grant Options which do not permit all of the foregoing forms of consideration to be used in payment of the exercise price or which otherwise restrict one or more forms of consideration. Without limiting the foregoing, if the Participant is not an Accredited Investor at the time of exercise of the Option, the Board can take any actions it determines necessary or advisable to comply with applicable securities laws, including limiting the form of consideration payable upon exercise of the Option or delaying or prohibiting the exercise of the Option for such period of time it so determines.

(b) **Limitations on Forms of Consideration.**

(i) **Tender of Stock.** Notwithstanding the foregoing, an Option may not be exercised by tender to the Company, or attestation to the ownership, of shares of Stock to the extent such tender or attestation would constitute a violation of the provisions of any law, regulation or agreement restricting the redemption of the Company's stock. Unless otherwise provided by the Board, an Option may not be exercised by tender to the Company, or attestation to the ownership, of shares of Stock unless such shares either have been owned by the Participant for more than six (6) months or such other period, if any, required by the Company (and were not used for another Option exercise by attestation during such period) or were not acquired, directly or indirectly, from the Company.

(ii) **Cashless Exercise.** The Company reserves, at any and all times, the right, in the Company's sole and absolute discretion, to establish, decline to approve or terminate any program or procedures for the exercise of Options by means of a Cashless Exercise, including with respect to one or more Participants specified by the Company notwithstanding that such program or procedures may be available to other Participants.

6.4 **Effect of Termination of Service.**

(a) **Option Exercisability.** Subject to earlier termination of the Option as otherwise provided by the Plan, an Option shall terminate immediately upon the Participant's termination of Service to the extent that it is then unvested and shall be exercisable after the Participant's termination of Service to the extent it is then vested only during the applicable time period determined in accordance with the Award Agreement evidencing the Option. To the extent required by applicable law, vested Options shall be exercisable for a minimum period of six (6) months following termination of the Participant's Service due to Disability or death and thirty (30) days following any other termination of Service (other than a termination due to Cause). Except as otherwise provided in an Award Agreement, if the Participant's Service is terminated for Cause, the Option shall terminate in its entirety and cease to be exercisable immediately upon such termination of Service. Notwithstanding the foregoing, no Option shall be exercisable later than the date of expiration of the Option's term as set forth in the Award Agreement evidencing the Option (the "***Option Expiration Date***").

(b) **Extension if Exercise Prevented by Law.** Notwithstanding the foregoing and other than with respect to a termination of Service for Cause, if the exercise of an

Option within the applicable time periods set forth in the Award Agreement is prevented by the provisions of Section 11 below, the Option shall remain exercisable until the later of (i) thirty (30) days after the date such exercise first would no longer be prevented by such provisions or (ii) the end of the applicable time period set forth in the Award Agreement, but in any event no later than the Option Expiration Date.

6.5 **Transferability of Options.** Unless otherwise provided in the Award Agreement evidencing the Option, during the lifetime of the Participant, an Option shall be exercisable only by the Participant or the Participant's guardian or legal representative. An Option shall not be subject in any manner to anticipation, alienation, sale, exchange, transfer, assignment, pledge, encumbrance, or garnishment by creditors of the Participant or the Participant's beneficiary, except transfer by will or by the laws of descent and distribution.

7. RESTRICTED STOCK AWARDS.

Restricted Stock Awards shall be evidenced by Award Agreements specifying whether the Award is a Restricted Stock Bonus or a Restricted Stock Purchase Right and the number of shares of Stock subject to the Award, in such form as the Board shall from time to time establish. Award Agreements evidencing Restricted Stock Awards may incorporate all or any of the terms of the Plan by reference and shall comply with and be subject to the following terms and conditions:

7.1 **Types of Restricted Stock Awards Authorized.** Restricted Stock Awards may be granted in the form of either a Restricted Stock Bonus or a Restricted Stock Purchase Right. Restricted Stock Awards may be granted upon such conditions as the Board shall determine, including, without limitation, upon the attainment of one or more performance goals.

7.2 **Purchase Price.** The purchase price for shares of Stock issuable under each Restricted Stock Purchase Right shall be established by the Board in its discretion. No monetary payment (other than applicable tax withholding) shall be required as a condition of receiving shares of Stock pursuant to a Restricted Stock Bonus, the consideration for which shall be services actually rendered to a Participating Company or for its benefit. Notwithstanding the foregoing, if required by applicable state corporate law, the Participant shall furnish consideration in the form of cash or past services rendered to a Participating Company or for its benefit having a value not less than the par value of the shares of Stock subject to a Restricted Stock Award.

7.3 **Purchase Period.** A Restricted Stock Purchase Right shall be exercisable within a period established by the Board, which shall in no event exceed thirty (30) days from the effective date of the grant of the Restricted Stock Purchase Right.

7.4 **Payment of Purchase Price.** Except as otherwise provided below, payment of the purchase price for the number of shares of Stock being purchased pursuant to any Restricted Stock Purchase Right shall be made (a) in cash, by check or in cash equivalent, (b) by such other consideration as may be approved by the Board from time to time to the extent permitted by applicable law, or (c) by any combination thereof.

7.5 Vesting and Restrictions on Transfer. Shares issued pursuant to any Restricted Stock Award may (but need not) be made subject to Vesting Conditions based upon the

satisfaction of such Service requirements, conditions, restrictions or performance criteria, as shall be established by the Board and set forth in the Award Agreement evidencing such Award. During any period in which shares acquired pursuant to a Restricted Stock Award remain subject to Vesting Conditions, such shares may not be sold, exchanged, transferred, pledged, assigned or otherwise disposed of other than pursuant to an Ownership Change Event or as provided in Section 7.8. The Board, in its discretion, may provide in any Award Agreement evidencing a Restricted Stock Award that, if the satisfaction of Vesting Conditions with respect to any shares subject to such Restricted Stock Award would otherwise occur on a day on which the sale of such shares would violate the provisions of the Insider Trading Policy, then satisfaction of the Vesting Conditions automatically shall be determined on the next trading day on which the sale of such shares would not violate the Insider Trading Policy. Upon request by the Company, each Participant shall execute any agreement evidencing such transfer restrictions prior to the receipt of shares of Stock hereunder and shall promptly present to the Company any and all certificates representing shares of Stock acquired hereunder for the placement on such certificates of appropriate legends evidencing any such transfer restrictions.

7.6 **Voting Rights; Dividends and Distributions.** Except as provided in this Section, Section 7.5 and any Award Agreement, during any period in which shares acquired pursuant to a Restricted Stock Award remain subject to Vesting Conditions, the Participant shall have all of the rights of a stockholder of the Company holding shares of Stock, including the right to vote such shares and to receive all dividends and other distributions paid with respect to such shares. However, in the event of a dividend or distribution paid in shares of Stock or other property or any other adjustment made upon a change in the capital structure of the Company as described in Section 4.2, any and all new, substituted or additional securities or other property (other than normal cash dividends) to which the Participant is entitled by reason of the Participant's Restricted Stock Award shall be immediately subject to the same Vesting Conditions as the shares subject to the Restricted Stock Award with respect to which such dividends or distributions were paid or adjustments were made.

7.7 **Effect of Termination of Service.** Unless otherwise provided by the Board in the Award Agreement evidencing a Restricted Stock Award, if a Participant's Service terminates for any reason, whether voluntary or involuntary (including the Participant's death or disability), then (a) the Company shall have the option to repurchase for the purchase price paid by the Participant any shares acquired by the Participant pursuant to a Restricted Stock Purchase Right which remain subject to Vesting Conditions as of the date of the Participant's termination of Service and (b) the Participant shall forfeit to the Company any shares acquired by the Participant pursuant to a Restricted Stock Bonus which remain subject to Vesting Conditions as of the date of the Participant's termination of Service. The Company shall have the right to assign at any time any repurchase right it may have, whether or not such right is then exercisable, to one or more persons as may be selected by the Company.

7.8 **Nontransferability of Restricted Stock Award Rights.** Rights to acquire shares of Stock pursuant to a Restricted Stock Award shall not be subject in any manner to anticipation, alienation, sale, exchange, transfer, assignment, pledge, encumbrance or garnishment by creditors of the Participant or the Participant's beneficiary, except transfer by will or the laws of descent and distribution. All rights with respect to a Restricted Stock Award granted to a

Participant hereunder shall be exercisable during his or her lifetime only by such Participant or the Participant's guardian or legal representative.

8. **STANDARD FORMS OF AWARD AGREEMENTS.**

8.1 **Award Agreements.** Each Award shall comply with and be subject to the terms and conditions set forth in the appropriate form of Award Agreement approved by the Board and as amended from time to time. No Award or purported Award shall be a valid and binding obligation of the Company unless evidenced by a fully executed Award Agreement. Any Award Agreement may consist of an appropriate form of Notice of Grant and a form of Agreement incorporated therein by reference, or such other form or forms, including electronic media, as the Board may approve from time to time.

8.2 **Authority to Vary Terms.** The Board shall have the authority from time to time to vary the terms of any standard form of Award Agreement either in connection with the grant or amendment of an individual Award or in connection with the authorization of a new standard form or forms; provided, however, that the terms and conditions of any such new, revised or amended standard form or forms of Award Agreement are not inconsistent with the terms of the Plan or applicable law.

9. **CHANGE IN CONTROL.**

9.1 **Effect of Change in Control on Awards.** Subject to the requirements and limitations of Section 409A of the Code, if applicable, the Board may provide for any one or more of the following:

(a) **Accelerated Vesting.** The Board may, in its discretion, provide in any Award Agreement or, in the event of a Change in Control, may take such actions as it deems appropriate to provide for the acceleration of the exercisability and/or vesting in connection with such Change in Control of each or any outstanding Award or portion thereof and shares acquired pursuant thereto upon such conditions, including termination of the Participant's Service prior to, upon, or following such Change in Control, to such extent as the Board shall determine.

(b) **Assumption, Continuation or Substitution of Awards.** In the event of a Change in Control, the surviving, continuing, successor, or purchasing corporation or other business entity or parent thereof, as the case may be (the "***Acquiror***"), may, without the consent of any Participant, assume or continue the Company's rights and obligations under each or any Award or portion thereof outstanding immediately prior to the Change in Control or substitute for each or any such outstanding Award or portion thereof a substantially equivalent award with respect to the Acquiror's stock. For purposes of this Section, if so determined by the Board, in its discretion, an Award or any portion thereof shall be deemed assumed if, following the Change in Control, the Award confers the right to receive, subject to the terms and conditions of the Plan and the applicable Award Agreement, for each share of Stock subject to such portion of the Award immediately prior to the Change in Control, the consideration (whether stock, cash, other securities or property or a combination thereof) to which a holder of a share of Stock on the effective date of the Change in Control was entitled; provided, however, that if such consideration is not solely common stock of the Acquiror, the Board may, with the consent of the Acquiror,

provide for the consideration to be received upon the exercise of the Award for each share of Stock to consist solely of common stock of the Acquiror equal in Fair Market Value to the per share consideration received by holders of Stock pursuant to the Change in Control. If any portion of such consideration may be received by holders of Stock pursuant to the Change in Control on a contingent or delayed basis, the Board may, in its discretion, determine such Fair Market Value per share as of the time of the Change in Control on the basis of the Board's good faith estimate of the present value of the probable future payment of such consideration. Except as otherwise provided in an Award Agreement, if the Acquiror does not assume or continue any Award, then any Award or portion thereof which is not assumed or continued by the Acquiror in connection with the Change in Control and which is not exercised as of the time of consummation of the Change in Control shall terminate and cease to be outstanding effective as of the time of consummation of the Change in Control. Notwithstanding the foregoing, shares acquired upon exercise of an Award prior to the Change in Control and any consideration received pursuant to the Change in Control with respect to such shares shall continue to be subject to all applicable provisions of the Award Agreement evidencing such Award except as otherwise provided in such Award Agreement.

(c) **Cash-Out of Outstanding Awards.** Notwithstanding anything in the Plan to the contrary, the Board may, in its discretion and without the consent of any Participant, determine that, upon the occurrence of a Change in Control, each or any Award or portion thereof outstanding immediately prior to the Change in Control shall be canceled in exchange for a payment with respect to each vested share (and each unvested share, if so determined by the Board) of Stock subject to such canceled Award in (i) cash, (ii) stock of the Company or of a corporation or other business entity that is a party to the Change in Control, or (iii) other property which, in any such case, shall be in an amount having a Fair Market Value equal to the Fair Market Value of the consideration to be paid per share of Stock in the Change in Control, reduced by the exercise or purchase price per share, if any, under such Award. If any portion of such consideration may be received by holders of Stock pursuant to the Change in Control on a contingent or delayed basis, the Board may, in its sole discretion, determine such Fair Market Value per share as of the time of the Change in Control on the basis of the Board's good faith estimate of the present value of the probable future payment of such consideration. In the event such determination is made by the Board, the amount of such payment (reduced by applicable withholding taxes, if any) shall be paid to Participants in respect of the vested portions of their canceled Awards as soon as practicable following the date of the Change in Control and in respect of the unvested portions of their canceled Awards in accordance with the vesting schedules applicable to such Awards.

9.2 **Federal Excise Tax Under Section 4999 of the Code.**

(a) **Potential Excise Taxes.** If at any time or from time to time, it shall be determined by independent tax professionals selected by the Company ("***Tax Professional***") that any acceleration of vesting pursuant to an Award and any other payment or benefit received or to be received by a Participant, whether or not pursuant to an Award granted under the Plan, would subject the Participant to any excise tax pursuant to Section 4999 of the Code (or any similar tax payable under any state, local, foreign or other law, but expressly excluding any income taxes and penalties or interest imposed pursuant to Section 409A of the Code ("***Excise Taxes***"), due to the characterization of such acceleration of vesting, payment or benefit as an "excess parachute payment" under Section 280G of the Code ("***Potential Parachute Payment***"), then Participant's

Potential Parachute Payment shall be either (i) provided to the Participant in full, or (ii) provided to Participant as to such lesser extent that would result in no portion of such benefits being subject to the Excise Taxes, whichever of the foregoing amounts, after taking into account applicable federal, state, local and foreign income and employment taxes, the Excise Tax, and any other applicable taxes, results in the receipt by the Participant, on an after-tax basis, of the greatest amount of benefits, notwithstanding that all or some portion of such benefits may be taxable under the Excise Taxes ("***Payments***").

(b) **Implementation of Any Benefit Reduction.** In the event of a reduction of benefits pursuant to Section 9.2(a), the Tax Professional shall determine which benefits shall be reduced so as to achieve the principle set forth in Section 9.2(a). For purposes of making the calculations required by Section 9.2(a), the Tax Professional may make reasonable assumptions and approximations concerning applicable taxes and may rely on reasonable, good faith interpretations concerning the application of the Code and other applicable legal authority. The Company and the Participant shall furnish to the Tax Professional such information and documents as the Tax Professional may reasonably request in order to make a determination under Section 9.2(a). The Company shall bear all costs the Tax Professional may reasonably incur in connection with any calculations contemplated by Section 9.2(a).

(c) **Potential Subsequent Adjustments.**

(i) If, notwithstanding any calculations performed or reduction in benefits imposed as described in Section 9.2(a), the IRS determines that Participant is liable for Excise Taxes as a result of the receipt of any payments characterized as "parachute payments" within the meaning of Section 280G of the Code, then the Participant shall be obligated to pay back to the Company, within thirty (30) days after a final IRS determination or in the event that the Participant challenges the final IRS determination, a final judicial determination, a portion of the Payments equal to the "***Repayment Amount***." The Repayment Amount shall be the smallest such amount, if any, as shall be required to be paid to the Company so that the Participant's net after-tax proceeds with respect to the Payments (after taking into account the payment of the Excise Taxes and all other applicable taxes imposed on such benefits) shall be maximized. The Repayment Amount shall be zero if a Repayment Amount of more than zero would not result in the Participant's net after-tax proceeds with respect to the Payments being maximized. If the Excise Taxes are not eliminated pursuant to this Section 9.2(c), the Participant shall pay the Excise Taxes.

(ii) Notwithstanding any other provision of this Section 9.2, if (A) there is a reduction in the payments to the Participant as described above in this Section 9.2, (B) the IRS later determines that the Participant is liable for Excise Taxes, the payment of which would result in the maximization of the Participant's net after-tax proceeds (calculated based on the full amount of the Participant's

parachute payments and as if the Participant's benefits had not previously been reduced), and (C) the Participant pays the Excise Tax, then the Company shall pay to the Participant those payments that were reduced pursuant to the application of the previous provisions of this Section 9.2 as soon as administratively possible after the Participant pays the Excise Taxes to the extent that the Participant's net after-tax proceeds with respect to the payment of the Payments are maximized.

10. TAX WITHHOLDING.

10.1 **Tax Withholding in General.** The Company shall have the right to deduct from any and all payments made under the Plan, or to require the Participant, through payroll withholding, cash payment or otherwise, including by means of a Net Exercise or Cashless Exercise of an Option, to make adequate provision for, the federal, state, local and foreign taxes (including any social insurance tax), if any, required by law to be withheld by the Participating Company Group with respect to an Award or the shares acquired pursuant thereto. The Company shall have no obligation to deliver shares of Stock or to release shares of Stock from an escrow established pursuant to an Award Agreement until the Participating Company Group's tax withholding obligations have been satisfied by the Participant.

10.2 **Withholding in Shares.** The Company shall have the right, but not the obligation, to deduct from the shares of Stock issuable to a Participant upon the exercise of an Award, or to accept from the Participant the tender of, a number of whole shares of Stock having a Fair Market Value, as determined by the Company, equal to all or any part of the tax withholding obligations of the Participating Company Group. The Fair Market Value of any shares of Stock withheld or tendered to satisfy any such tax withholding obligations shall not exceed the amount determined by the applicable minimum statutory withholding rates.

11. COMPLIANCE WITH SECURITIES LAW.

The grant of Awards and the issuance of shares of Stock pursuant to any Award shall be subject to compliance with all applicable requirements of federal, state and foreign law with respect to such securities and the requirements of any stock exchange or market system upon which the Stock may then be listed. In addition, no Award may be exercised or shares issued pursuant to an Award unless (a) a registration statement under the Securities Act shall at the time of such exercise or issuance be in effect with respect to the shares issuable pursuant to the Award or (b) in the opinion of legal counsel to the Company, the shares issuable pursuant to the Award may be issued in accordance with the terms of an applicable exemption from the registration requirements of the Securities Act. The inability of the Company to obtain from any regulatory body having jurisdiction the authority, if any, deemed by the Company's legal counsel to be necessary to the lawful issuance and sale of any shares hereunder shall relieve the Company of any liability in respect of the failure to issue or sell such shares as to which such requisite authority shall not have been obtained. As a condition to issuance of any Stock, the Company may require the Participant to satisfy any qualifications that may be necessary or appropriate, to evidence compliance with any applicable law or regulation and to make any representation or warranty with

respect thereto as may be requested by the Company, including status as an Accredited Investor at the time of grant, exercise or vesting of an Award.

12. AMENDMENT OR TERMINATION OF PLAN.

The Board may amend, suspend or terminate the Plan at any time. No amendment, suspension or termination of the Plan shall affect any then outstanding Award unless expressly provided by the Board. Except as provided by the next sentence, no amendment, suspension or termination of the Plan may materially adversely affect any then outstanding Award without the consent of the Participant. Notwithstanding any other provision of the Plan or any Award Agreement to the contrary, the Board may, in its sole and absolute discretion and without the consent of any Participant, amend the Plan or any Award Agreement, to take effect retroactively or otherwise, as it deems necessary or advisable for the purpose of conforming the Plan or such Award Agreement to any present or future law, regulation or rule applicable to the Plan, including, but not limited to, Section 409A of the Code.

13. MISCELLANEOUS PROVISIONS.

13.1 **Repurchase Rights.** Shares of Stock issued under the Plan may be subject to a right of first refusal, one or more repurchase options, or other conditions and restrictions as determined by the Board in its discretion at the time the Award is granted. The Company shall have the right to assign at any time any repurchase right or other right that it may have with respect to a share of Stock issued under the Plan, whether or not such right is then exercisable, to one or more persons as may be selected by the Company. Upon request by the Company, each Participant shall execute any agreement evidencing such transfer restrictions prior to the issuance of shares of Stock hereunder and shall promptly present to the Company any and all certificates representing shares of Stock acquired hereunder for the placement on such certificates of appropriate legends evidencing any such transfer restrictions. To the extent required by any agreement of stockholders or other agreement to which the Company is or may become subject, persons acquiring shares of Stock issued under the Plan will be required to enter into such agreement upon acquiring such shares of Stock.

13.2 **Provision of Information.** To the extent required by applicable law, the Company will provide information to Participants regarding the Company.

13.3 **Rights as Employee, Consultant or Director.** No person, even though eligible pursuant to Section 5, shall have a right to be selected as a Participant, or, having been so selected, to be selected again as a Participant. Nothing in the Plan or any Award granted under the Plan shall confer on any Participant a right to remain an Employee, Consultant or Director or interfere with or limit in any way any right of a Participating Company to terminate an Engaging Company Service Agreement or the Participant's Service at any time. To the extent that a Consultant receives an Award under the Plan, that Award shall in no event be understood or interpreted to mean that the Company is the Consultant's employer or that the Consultant has an employment relationship with the Company.

13.4 **Rights as a Stockholder.** A Participant shall have no rights as a stockholder with respect to any shares covered by an Award until the date of the issuance of such shares (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company). No adjustment shall be made for dividends, distributions or other rights for which the record date is prior to the date such shares are issued, except as provided in Section 4.2 or another provision of the Plan.

13.5 **Delivery of Title to Shares.** Subject to any governing rules or regulations, the Company shall issue or cause to be issued the shares of Stock acquired pursuant to an Award and shall deliver such shares to or for the benefit of the Participant by means of one or more of the following: (a) by delivering to the Participant evidence of book entry shares of Stock credited to the account of the Participant, (b) by depositing such shares of Stock for the benefit of the Participant with any broker with which the Participant has an account relationship, (c) by delivering such shares of Stock to the Participant in certificated form, or (d) by delivering such shares to an escrow agent who shall hold such shares in accordance with the terms of a form of escrow agreement established by the Company in order to ensure compliance with the terms of the Plan, the Award Agreement under which the right to receive such shares of Stock were granted, and any other conditions, restrictions or terms of other agreement to which such shares of Stock are subject upon their issuance.

13.6 **Fractional Shares.** The Company shall not be required to issue fractional shares upon the exercise or settlement of any Award.

13.7 **Retirement and Welfare Plans.** To the extent applicable, no shares of Stock or cash paid pursuant to Awards under the Plan shall be included as "compensation" for purposes of computing the benefits payable to any Participant under any Participating Company's retirement plans (both qualified and non-qualified) or welfare benefit plans unless such other plan expressly provides that such compensation shall be taken into account in computing such benefits.

13.8 **Severability.** If any one or more of the provisions (or any part thereof) of the Plan shall be held invalid, illegal or unenforceable in any respect, such provision shall be modified so as to make it valid, legal and enforceable, and the validity, legality and enforceability of the remaining provisions (or any part thereof) of the Plan shall not in any way be affected or impaired thereby.

13.9 **No Constraint on Corporate Action.** Nothing in the Plan shall be construed to: (a) limit, impair, or otherwise affect the Company's or another Participating Company's right or power to make adjustments, reclassifications, reorganizations, or changes of its capital or business structure, or to merge or consolidate, or dissolve, liquidate, sell, or transfer all or any part of its business or assets; or (b) limit the right or power of the Company or another Participating Company to take any action which such entity deems to be necessary or appropriate.

13.10 **Choice of Law.** Except to the extent governed by applicable federal law, the validity, interpretation, construction and performance of the Plan and each Award Agreement shall be governed by the laws of the State of California, without regard to its conflict of law rules.

PLAN HISTORY

June 8, 2015	Board adopts Progenity, Inc. 2015 Consultant Stock Plan, with an initial reserve of 3,000,000 shares.

PROGENITY, INC.

2018 EQUITY INCENTIVE PLAN (SECOND AMENDED & RESTATED)

ADOPTED BY THE BOARD: FEBRUARY 22, 2018 (FIRST AMENDMENT MARCH 6, 2019, SECOND AMENDMENT DECEMBER 5, 2019)

APPROVED BY THE STOCKHOLDERS: FEBRUARY 22, 2018 (FIRST AMENDMENT MARCH 6, 2019, SECOND AMENDMENT DECEMBER 5, 2019)

1. GENERAL.

(a) **Successor to and Continuation of Prior Plans**. The Plan is the successor to and continuation of the Company's Amended and Restated 2012 Stock Plan, as amended, and the Company's 2015 Consultant Stock Plan (each a "**Prior Plan**"). From and after 11:59 p.m. Pacific time on the Effective Date, no additional stock awards will be granted under a Prior Plan. All stock awards granted under a Prior Plan remain subject to the terms of that Prior Plan. All Awards granted on or after 11:59 p.m. Pacific Time on the Effective Date shall be subject to the terms of the Plan.

(b) **Eligible Award Recipients**. Employees, Directors and Consultants are eligible to receive Awards.

(c) **Available Awards**. The Plan provides for the grant of the following Awards: (i) Incentive Stock Options; (ii) Nonstatutory Stock Options; (iii) Stock Appreciation Rights; (iv) Restricted Stock Awards; (v) Restricted Stock Unit Awards; (vi) Performance Stock Awards; (vii) Performance Cash Awards; and (viii) Other Stock Awards.

(d) **Purpose**. The Plan, through the granting of Awards, is intended to help the Company secure and retain the services of eligible award recipients, provide incentives for such persons to exert maximum efforts for the success of the Company and any Affiliate and provide a means by which the eligible recipients may benefit from increases in the value of the Common Stock.

2. ADMINISTRATION.

(a) **Administration by Board**. The Board will administer the Plan. The Board may delegate administration of the Plan to a Committee or Committees, as provided in Section 2(c).

(b) **Powers of Board**. The Board will have the power, subject to, and within the limitations of, the express provisions of the Plan:

(i) To determine: (A) who will be granted Awards; (B) when and how each Award will be granted; (C) what type of Award will be granted; (D) the provisions of each Award (which need not be identical), including when a person will be permitted to exercise or otherwise receive cash or Common Stock under the Award; (E) the number of shares of

Common Stock subject to, or the cash value of, an Award; and (F) the Fair Market Value applicable to a Stock Award.

(ii) To construe and interpret the Plan and Awards granted under it, and to establish, amend and revoke rules and regulations for administration of the Plan and Awards. The Board, in the exercise of these powers, may correct any defect, omission or inconsistency in the Plan or in any Award Document or in the written terms of a Performance Cash Award, in a manner and to the extent it will deem necessary or expedient to make the Plan or Award fully effective.

(iii) To settle all controversies regarding the Plan and Awards granted under it.

(iv) To accelerate, in whole or in part, or to extend, in whole or in part, the time during which an Award may be exercised or vest, or at which cash or shares of Common Stock may be issued.

(v) To suspend or terminate the Plan at any time. Except as otherwise provided in the Plan or an Award Document, suspension or termination of the Plan will not materially impair a Participant's rights under his or her then-outstanding Award without his or her written consent, except as provided in subsection (viii) below.

(vi) To amend the Plan in any respect the Board deems necessary or advisable, including, without limitation, adopting amendments relating to Incentive Stock Options and nonqualified deferred compensation under Section 409A of the Code and/or making the Plan or Awards granted under the Plan exempt from or compliant with the requirements for Incentive Stock Options or exempt from or compliant with the requirements for nonqualified deferred compensation under Section 409A of the Code, subject to the limitations, if any, of applicable law. If required by applicable law or listing requirements, and except as provided in Section 9(a) relating to Capitalization Adjustments, the Company will seek stockholder approval of any amendment of the Plan that (A) increases the number of shares of Common Stock available for issuance under the Plan, (B) materially expands the class of individuals eligible to receive Awards under the Plan, (C) materially increases the benefits accruing to Participants under the Plan, (D) materially reduces the price at which shares of Common Stock may be issued or purchased under the Plan, (E) materially extends the term of the Plan, or (F) materially expands the types of Awards available for issuance under the Plan. Except as otherwise provided in the Plan (including subsection (viii) below) or an Award Document, no amendment of the Plan will materially impair a Participant's rights under a then-outstanding Award without the Participant's written consent.

(vii) To submit any amendment to the Plan for stockholder approval, including, but not limited to, amendments to the Plan intended to satisfy the requirements of (A) Section 422 of the Code regarding "incentive stock options" or (B) Rule 16b-3 of Exchange Act or any successor rule, if applicable.

(viii) To approve forms of Award Documents for use under the Plan and to amend the terms of any one or more outstanding Awards, including, but not limited to, amendments to provide terms more favorable to the Participant than previously provided in the

Award Documents for such Awards, subject to any specified limits in the Plan that are not subject to Board discretion. A Participant's rights under any Award will not be impaired by any such amendment unless the Company requests the consent of the affected Participant, and the Participant consents in writing. However, a Participant's rights will not be deemed to have been impaired by any such amendment if the Board, in its sole discretion, determines that the amendment, taken as a whole, does not materially impair the Participant's rights. In addition, subject to the limitations of applicable law, if any, the Board may amend the terms of any one or more Awards without the affected Participant's consent (A) to maintain the qualified status of the Award as an Incentive Stock Option under Section 422 of the Code, (B) to change the terms of an Incentive Stock Option, if such change results in impairment of the Award solely because it impairs the qualified status of the Award as an Incentive Stock Option under Section 422 of the Code, (C) to clarify the manner of exemption from, or to bring the Award into compliance with, Section 409A of the Code, or (D) to comply with other applicable laws or listing requirements.

(ix) Generally, to exercise such powers and to perform such acts as the Board deems necessary or expedient to promote the best interests of the Company and that are not in conflict with the provisions of the Plan and/or Award Documents.

(x) To adopt such procedures and sub-plans as are necessary or appropriate (A) to permit or facilitate participation in the Plan by persons eligible to receive Awards under the Plan who are foreign nationals or employed outside the United States or (B) allow Awards to qualify for special tax treatment in a foreign jurisdiction; provided that Board approval will not be necessary for immaterial modifications to the Plan or any Award Document that are required for compliance with the laws of a foreign jurisdiction.

(c) **Delegation to Committee**. The Board may delegate some or all of the administration of the Plan to a Committee or Committees. If administration of the Plan is delegated to a Committee, the Committee will have, in connection with the administration of the Plan, the powers theretofore possessed by the Board that have been delegated to the Committee, including the power to delegate to a subcommittee of the Committee any of the administrative powers the Committee is authorized to exercise (and references in the Plan to the Board will thereafter be to the Committee or subcommittee). Any delegation of administrative powers will be reflected in the charter of the Committee to which the delegation is made, or resolutions, not inconsistent with the provisions of the Plan, adopted from time to time by the Board or Committee (as applicable). The Committee may, at any time, abolish the subcommittee and/or revest in the Committee any powers delegated to any subcommittee. Unless otherwise provided by the Board, delegation of authority by the Board to a Committee, or to an Officer pursuant to Section 2(d), does not limit the authority of the Board, which may continue to exercise any authority so delegated and may concurrently administer the Plan with the Committee and may, at any time, revest in the Board some or all of the powers previously delegated.

(d) **Delegation to an Officer**. The Board may delegate to one (1) or more Officers the authority to do one or both of the following: (i) designate Employees who are not Officers to be recipients of Options and SARs (and, to the extent permitted by applicable law, other Stock Awards) and, to the extent permitted by applicable law, the terms of such Awards; and (ii) determine the number of shares of Common Stock to be subject to such Stock Awards granted to such Employees; provided, however, that the Board resolutions regarding such delegation will

specify the total number of shares of Common Stock that may be subject to the Stock Awards granted by such Officer and that such Officer may not grant a Stock Award to himself or herself. Any such Stock Awards will be granted on the form of Stock Award Document approved by the Committee or the Board for use in connection with such Stock Awards, unless otherwise provided for in the resolutions approving the delegation authority.

(e) **Effect of Board's Decision**. All determinations, interpretations and constructions made by the Board (or a duly authorized Committee, subcommittee or Officer exercising powers delegated by the Board under this Section 2) in good faith will not be subject to review by any Person and will be final, binding and conclusive on all Persons, unless found by a court of competent jurisdiction to have been either (i) arbitrary and capricious or (ii) made in bad faith.

3. SHARES SUBJECT TO THE PLAN.

(a) **Share Reserve.**

(i) Subject to Section 9(a) relating to Capitalization Adjustments, the aggregate maximum number of shares of Common Stock that may be issued pursuant to Stock Awards from and after the date of adoption of the Plan by the Board will be sixteen million six hundred fifty thousand (16,650,000) shares of Common Stock (the "**Share Reserve**").

(ii) From and after the Initial Public Offering Date, the Share Reserve will automatically increase on January 1st of each year, during the term of the Plan, commencing on January 1 of the year following the year in which the Initial Public Offering Date occurs, in an amount equal to two percent (2 %) of the total number of shares of Capital Stock outstanding on December 31st of the preceding calendar year, calculated on a fully diluted, fully converted basis. The Board may provide that there will be no January 1st increase in the Share Reserve for such year or that the increase in the Share Reserve for such year will be a smaller number of shares of Common Stock than would otherwise occur pursuant to the preceding sentence.

(iii) For clarity, the Share Reserve is a limitation on the number of shares of Common Stock that may be issued under to the Plan. As a single share may be subject to grant more than once (e.g., if a share subject to a Stock Award is forfeited, it may be made subject to grant again as provided in Section 3(b) below), the Share Reserve is not a limit on the number of Stock Awards that can be granted.

(iv) Shares may be issued under the terms of the Plan in connection with a merger or acquisition as permitted by NASDAQ Listing Rule 5635(c), NYSE Listed Company Manual Section 303A.08, AMEX Company Guide Section 711 or other applicable rule, and such issuance will not reduce the number of shares available for issuance under the Plan.

(b) **Reversion of Shares to the Share Reserve**. If a Stock Award or any portion of a Stock Award (i) expires, is canceled, forfeited or otherwise terminates without all of the shares covered by the Stock Award having been issued or (ii) is settled in cash (i.e., the Participant receives cash rather than stock), such expiration, cancelation, forfeiture, termination or settlement will not reduce (or otherwise offset) the number of shares of Common Stock that are available for issuance under the Plan. If any shares of Common Stock issued under a Stock

Award are forfeited back to or repurchased or otherwise reacquired by the Company because of the failure to meet a contingency or condition required to vest such shares in the Participant, then the shares that are forfeited, repurchased or reacquired will revert to and again become available for issuance under the Plan. Any shares retained or reacquired by the Company in satisfaction of tax withholding obligations on a Stock Award, as consideration for the exercise or purchase price of a Stock Award, or with the proceeds paid by the Participant under the terms of a Stock Award, will again become available for issuance under the Plan. If the Company repurchases shares of Common Stock with stock option exercise or stock purchase proceeds, such shares shall be added to the Share Reserve. For any Stock Award with respect to which a net number of shares of Common Stock are issued, whether in satisfaction of tax withholding obligations, exercise or purchase prices or otherwise, only the net number of shares shall reduce the Share Reserve.

(c) **Incentive Stock Option Limit**. Subject to Section 9(a) relating to Capitalization Adjustments, the aggregate maximum number of shares of Common Stock that may be issued on the exercise of Incentive Stock Options will be sixteen million six hundred fifty thousand (16,650,000) shares of Common Stock.

(d) **Non-Employee Director Limit**. The aggregate dollar value of Stock Awards (based on the grant date fair value of the Stock Awards) granted under this Plan during any calendar year to any one non-employee Director shall not exceed $750,000.

(e) **Source of Shares**. The stock issuable under the Plan will be shares of authorized but unissued or reacquired Common Stock and may include shares repurchased by the Company on the open market or otherwise or shares classified as treasury shares.

4. ELIGIBILITY.

(a) **Eligibility for Specific Stock Awards**. Incentive Stock Options may be granted only to employees of the Company or a "parent corporation" or "subsidiary corporation" thereof (as such terms are defined in Sections 424(e) and 424(f) of the Code). Stock Awards other than Incentive Stock Options may be granted to Employees, Directors and Consultants; provided, however, that Stock Awards may not be granted to Employees, Directors and Consultants who are providing Continuous Service only to any "parent" of the Company, as such term is defined in Rule 405 of the Securities Act, unless (i) the stock underlying such Stock Awards is treated as "service recipient stock" under Section 409A of the Code (for example, because the Stock Awards are granted pursuant to a corporate transaction such as a spin off transaction), or (ii) the Company, in consultation with its legal counsel, has determined that such Stock Awards are otherwise exempt from or comply with the requirements of Section 409A of the Code.

(b) **Ten Percent Stockholders**. A Ten Percent Stockholder will not be granted an Incentive Stock Option unless the exercise price of such Option is at least 110% of the Fair Market Value on the date of grant and the Option is not exercisable after the expiration of five (5) years from the date of grant.

5. PROVISIONS RELATING TO OPTIONS AND STOCK APPRECIATION RIGHTS.

Each Option or SAR will be in such form and will contain such terms and conditions as the Board deems appropriate. All Options will be separately designated Incentive Stock Options or Nonstatutory Stock Options at the time of grant, and, if certificates are issued, a separate certificate or certificates will be issued for shares of Common Stock purchased on exercise of each type of Option. If an Option is not specifically designated as an Incentive Stock Option, or if an Option is designated as an Incentive Stock Option but some portion or all of the Option fails to qualify as an Incentive Stock Option under the applicable rules, then the Option (or portion thereof) will be a Nonstatutory Stock Option. The provisions of separate Options or SARs need not be identical; provided, however, that each Award Document will conform to (through incorporation of provisions hereof by reference in the applicable Award Document or otherwise) the substance of each of the following provisions:

(a) **Term**. Subject to Section 4(b) regarding Ten Percent Stockholders, no Option or SAR will be exercisable after the expiration of 10 years from the date of its grant or such shorter period specified in the Award Document.

(b) **Exercise Price**. Subject to Section 4(b) regarding Ten Percent Stockholders, the exercise price of each Option or SAR will be not less than 100% of the Fair Market Value of the Common Stock subject to the Option or SAR on the date the Award is granted. Notwithstanding the foregoing, an Option or SAR may be granted with an exercise price lower than 100% of the Fair Market Value of the Common Stock subject to the Award if such Award is granted pursuant to an assumption of or substitution for another option or stock appreciation right pursuant to a corporate transaction and in a manner consistent with the provisions of Section 409A of the Code and, if applicable, Section 424(a) of the Code. Each SAR will be denominated in shares of Common Stock equivalents.

(c) **Purchase Price for Options**. The purchase price of shares of Common Stock acquired pursuant to the exercise of an Option may be paid, to the extent permitted by applicable law and as determined by the Board in its sole discretion, by any combination of the methods of payment set forth below. The Board will have the authority to grant Options that do not permit all of the following methods of payment (or otherwise restrict the ability to use certain methods) and to grant Options that require the consent of the Company to use a particular method of payment. The permitted methods of payment are as follows:

(i) by cash, check, bank draft or money order payable to the Company;

(ii) pursuant to a program developed under Regulation T as promulgated by the Federal Reserve Board or a successor regulation, or a similar rule in a foreign jurisdiction of domicile of a Participant, that, prior to or contemporaneously with the issuance of shares of Common Stock subject to the Option, results in either the receipt of cash (or check) by the Company or the receipt of irrevocable instructions to pay the aggregate exercise price to the Company from the proceeds of sale of such stock;

(iii) by delivery to the Company (either by actual delivery or attestation) of shares of Common Stock;

(iv) if an Option is a Nonstatutory Stock Option, by a "net exercise" arrangement pursuant to which the Company will reduce the number of shares of Common Stock issuable upon exercise by the largest whole number of shares with a Fair Market Value that does not exceed the aggregate exercise price; provided, however, that the Company will accept cash or other payment from the Participant to the extent of any remaining balance of the aggregate exercise price not satisfied by such reduction in the number of whole shares to be issued. Shares of Common Stock will no longer be subject to an Option and will not be exercisable thereafter to the extent that (A) shares issuable upon exercise are used to pay the exercise price pursuant to the "net exercise," (B) shares are delivered to the Participant as a result of such exercise, and (C) shares are withheld to satisfy tax withholding obligations; or

(v) in any other form of legal consideration that the Board determines is a benefit to the Company and specified in the applicable Award Document.

(d) **Exercise and Payment of a SAR**. To exercise any outstanding SAR, the Participant must provide written notice of exercise to the Company in compliance with the provisions of the Stock Appreciation Right Award Document evidencing such SAR. The appreciation distribution payable on the exercise of a SAR will be not greater than an amount equal to the excess of (A) the aggregate Fair Market Value (on the date of the exercise of the SAR) of a number of shares of Common Stock equal to the number of Common Stock equivalents in which the Participant is vested under such SAR (with respect to which the Participant is exercising the SAR on such date), over (B) the aggregate exercise price of the number of Common Stock equivalents with respect to which the Participant is exercising the SAR on such date. The appreciation distribution may be paid in Common Stock, in cash, in any combination of the two or in any other form of consideration, as determined by the Board and contained in the Award Document evidencing such SAR.

(e) **Transferability of Options and SARs**. The Board may, in its sole discretion, impose such limitations on the transferability of Options and SARs as the Board determines. In the absence of such a determination by the Board to the contrary, the following restrictions on the transferability of Options and SARs will apply:

(i) Restrictions on Transfer. An Option or SAR will not be transferable except by will or by the laws of descent and distribution (or pursuant to subsections (ii) and (iii) below), and will be exercisable during the lifetime of the Participant only by the Participant. The Board may permit transfer of the Option or SAR in a manner that is not prohibited by applicable tax and securities laws. Except as explicitly provided herein, neither an Option nor a SAR may be transferred for consideration.

(ii) Domestic Relations Orders. Subject to the approval of the Board or a duly authorized Officer, an Option or SAR may be transferred pursuant to the terms of a domestic relations order, official marital settlement agreement or other divorce or separation instrument as permitted by U.S. Treasury Regulation 1.421-1(b)(2). If an Option is an Incentive Stock Option, such Option may be deemed to be a Nonstatutory Stock Option as a result of such transfer.

(iii) Beneficiary Designation. Subject to the approval of the Board or a duly authorized Officer, a Participant may, by delivering written notice to the Company, in a form approved by the Company (or the designated broker), designate a third party who, on the death of the Participant, will thereafter be entitled to exercise the Option or SAR and receive shares of Common Stock or other consideration resulting from such exercise. In the absence of such a designation, the executor or administrator of the Participant's estate will be entitled to exercise the Option or SAR and receive the Common Stock or other consideration resulting from such exercise. However, the Company may prohibit designation of a beneficiary at any time, including due to any conclusion by the Company that such designation would be inconsistent with the provisions of applicable laws.

(f) **Vesting Generally**. The total number of shares of Common Stock subject to an Option or SAR may vest and therefore become exercisable in periodic installments based on completion of specified periods of Continuous Service that may or may not be equal. The Option or SAR may be subject to such other terms and conditions with respect to the time or times when it may or may not be exercised (which may be based on the satisfaction of performance goals or other criteria) as the Board may deem appropriate. The vesting provisions of individual Options or SARs may vary. The provisions of this Section 5(f) are subject to any Option or SAR provisions governing the minimum number of shares of Common Stock as to which an Option or SAR may be exercised.

(g) **Termination of Continuous Service**. Except as otherwise provided in the applicable Award Document, or other agreement between the Participant and the Company or any Affiliate, if a Participant's Continuous Service terminates (other than for Cause and other than upon the Participant's death or Disability), the Participant may exercise his or her Option or SAR (to the extent that the Participant was entitled to exercise such Award as of the date of termination of Continuous Service) within the period of time ending on the earlier of (i) the date three (3) months following the termination of the Participant's Continuous Service and (ii) the expiration of the term of the Option or SAR as set forth in the applicable Award Document. If, after termination of Continuous Service, the Participant does not exercise his or her Option or SAR within the applicable time frame, the Option or SAR will terminate.

(h) **Extension of Termination Date**. Except as otherwise provided in the applicable Award Document, or other agreement between the Participant and the Company or any Affiliate, if the exercise of an Option or SAR following the termination of the Participant's Continuous Service (other than for Cause and other than upon the Participant's death or Disability) would be prohibited at any time solely because the issuance of shares of Common Stock would violate any provisions of the Securities Act, then the Option or SAR will terminate on the earlier of (i) the expiration of a total period of three (3) months (that need not be consecutive) after the termination of the Participant's Continuous Service during which the exercise of the Option or SAR would not be in violation of such provisions, and (ii) the expiration of the term of the Option or SAR as set forth in the applicable Award Document. In addition, unless otherwise provided in a Participant's applicable Award Document, or other agreement between the Participant and the Company or any Affiliate, if the sale of any Common Stock received upon exercise of an Option or SAR following the termination of the Participant's Continuous Service (other than for Cause) would violate the Company's Insider Trading Policy (the "**Insider Trading Policy**"), and the Company does not waive the potential violation of the policy or

otherwise permit the sale, or allow the Participant to surrender shares of Common Stock to the Company in satisfaction of any exercise price and/or any withholding obligations under Section 8(h), then the Option or SAR will terminate on the earlier of (i) the expiration of a period of months (that need not be consecutive) equal to the applicable post-termination exercise period after the termination of the Participant's Continuous Service during which the sale of the Common Stock received upon exercise of the Option or SAR would not be in violation of the Insider Trading Policy, or (ii) the expiration of the term of the Option or SAR as set forth in the applicable Award Document.

(i) **Disability of Participant**. Except as otherwise provided in the applicable Award Document, or other agreement between the Participant and the Company or any Affiliate, if a Participant's Continuous Service terminates as a result of the Participant's Disability, the Participant may exercise his or her Option or SAR (to the extent that the Participant was entitled to exercise such Option or SAR as of the date of termination of Continuous Service), but only within such period of time ending on the earlier of (i) the date 12 months following such termination of Continuous Service, and (ii) the expiration of the term of the Option or SAR as set forth in the applicable Award Document. If, after termination of Continuous Service, the Participant does not exercise his or her Option or SAR within the applicable time frame, the Option or SAR (as applicable) will terminate.

(j) **Death of Participant**. Except as otherwise provided in the applicable Award Document, or other agreement between the Participant and the Company or any Affiliate, if (i) a Participant's Continuous Service terminates as a result of the Participant's death, or (ii) the Participant dies within the period (if any) specified in the Plan or the applicable Award Document, or other agreement between the Participant and the Company or any Affiliate, for exercisability after the termination of the Participant's Continuous Service (for a reason other than death), then the Option or SAR may be exercised (to the extent the Participant was entitled to exercise such Option or SAR as of the date of death) by the Participant's estate, by a person who acquired the right to exercise the Option or SAR by bequest or inheritance or by a person designated to exercise the Option or SAR upon the Participant's death, but only within the period ending on the earlier of (i) the date 18 months following the date of death, and (ii) the expiration of the term of such Option or SAR as set forth in the applicable Award Document. If, after the Participant's death, the Option or SAR is not exercised within the applicable time frame, the Option or SAR will terminate.

(k) **Termination for Cause**. Except as explicitly provided otherwise in a Participant's Award Document or other individual written agreement between the Company or any Affiliate and the Participant, if a Participant's Continuous Service is terminated for Cause, the Option or SAR will terminate upon the date on which the event giving rise to the termination for Cause first occurred, and the Participant will be prohibited from exercising his or her Option or SAR from and after the date on which the event giving rise to the termination for Cause first occurred (or, if required by law, the date of termination of Continuous Service). If a Participant's Continuous Service is suspended pending an investigation of the existence of Cause, all of the Participant's rights under the Option or SAR will also be suspended during the investigation period.

(l) **Non-Exempt Employees**. If an Option or SAR is granted to an Employee who is a non-exempt employee for purposes of the U.S. Fair Labor Standards Act of 1938, as amended, the Option or SAR will not be first exercisable for any shares of Common Stock until at least 6 months following the date of grant of the Option or SAR (although the Award may vest prior to such date). Consistent with the provisions of the U.S. Worker Economic Opportunity Act, (i) if such non-exempt Employee dies or suffers a Disability, (ii) upon a Corporate Transaction in which such Option or SAR is not assumed, continued, or substituted, (iii) upon a Change in Control, or (iv) upon the non-exempt Employee's retirement (as such term may be defined in the non-exempt Employee's applicable Award Document, in another agreement between the non-exempt Employee and the Company or any Affiliate, or, if no such definition, in accordance with the Company's then current employment policies and guidelines), the vested portion of any Options and SARs may be exercised earlier than 6 months following the date of grant. The foregoing provision is intended to operate so that any income derived by a non-exempt Employee in connection with the exercise or vesting of an Option or SAR will be exempt from his or her regular rate of pay. To the extent permitted and/or required for compliance with the U.S. Worker Economic Opportunity Act to ensure that any income derived by a non-exempt Employee in connection with the exercise, vesting or issuance of any shares of Common Stock under any other Stock Award will be exempt from such employee's regular rate of pay, the provisions of this paragraph will apply to all Stock Awards and are hereby incorporated by reference into such Stock Award Documents.

6. PROVISIONS OF STOCK AWARDS OTHER THAN OPTIONS AND SARS.

(a) **Restricted Stock Awards**. Each Restricted Stock Award Document will be in such form and will contain such terms and conditions as the Board deems appropriate. To the extent consistent with the Company's bylaws, at the Board's election, shares of Common Stock may be (x) held in book entry form subject to the Company's instructions until any restrictions relating to the Restricted Stock Award lapse, or (y) evidenced by a certificate, which certificate will be held in such form and manner as determined by the Board. The terms and conditions of Restricted Stock Award Documents may change from time to time, and the terms and conditions of separate Restricted Stock Award Documents need not be identical. Each Restricted Stock Award Document will conform to (through incorporation of the provisions hereof by reference in the agreement or otherwise) the substance of each of the following provisions:

(i) Consideration. A Restricted Stock Award may be awarded in consideration for (A) cash, check, bank draft or money order payable to the Company, (B) past services to the Company or an Affiliate, or (C) any other form of legal consideration (including future services) that the Board determines is a benefit to the Company, in its sole discretion, and permissible under applicable law.

(ii) Vesting. Shares of Common Stock awarded under the Restricted Stock Award Document may be subject to forfeiture to the Company in accordance with a vesting schedule and subject to such conditions as may be determined by the Board.

(iii) Termination of Participant's Continuous Service. If a Participant's Continuous Service terminates, the Company may receive through a forfeiture condition or a repurchase right, any or all of the shares of Common Stock held by the Participant that have not

vested as of the date of termination of Continuous Service under the terms of the Restricted Stock Award Document.

(iv) Transferability. Shares of Common Stock issued pursuant to an Award, and rights to acquire shares of Common Stock under the Restricted Stock Award Document, will be transferable by the Participant only upon such terms and conditions as are set forth in the Restricted Stock Award Document, as the Board determines in its sole discretion, so long as such shares of Common Stock remains subject to the terms of the Restricted Stock Award Document.

(v) Dividends. A Restricted Stock Award Document may provide that any dividends paid on Restricted Stock will be subject to the same vesting and forfeiture restrictions as apply to the shares of Common Stock subject to the Restricted Stock Award to which they relate.

(b) **Restricted Stock Unit Awards**. Each Restricted Stock Unit Award Document will be in such form and will contain such terms and conditions as the Board deems appropriate. The terms and conditions of Restricted Stock Unit Award Documents may change from time to time, and the terms and conditions of separate Restricted Stock Unit Award Documents need not be identical. Each Restricted Stock Unit Award Document will conform to (through incorporation of the provisions hereof by reference in the Agreement or otherwise) the substance of each of the following provisions:

(i) Consideration. At the time of grant of a Restricted Stock Unit Award, the Board will determine the consideration, if any, to be paid by the Participant upon delivery of each share of Common Stock subject to the Restricted Stock Unit Award. The consideration to be paid (if any) by the Participant for each share of Common Stock subject to a Restricted Stock Unit Award may be paid in any form of legal consideration that the Board determines is a benefit to the Company, in its sole discretion, and permissible under applicable law.

(ii) Vesting. At the time of the grant of a Restricted Stock Unit Award, the Board may impose such restrictions on or conditions to the vesting of the Restricted Stock Unit Award as it, in its sole discretion, deems appropriate.

(iii) Payment. A Restricted Stock Unit Award may be settled by the delivery of shares of Common Stock, their cash equivalent, any combination thereof or in any other form of consideration, as determined by the Board and contained in the Restricted Stock Unit Award Document.

(iv) Additional Restrictions. At the time of the grant of a Restricted Stock Unit Award, the Board, as it deems appropriate, may impose such restrictions or conditions that delay the delivery of the shares of Common Stock (or their cash equivalent) subject to a Restricted Stock Unit Award to a time after the vesting of such Restricted Stock Unit Award.

(v) Dividend Equivalents. Dividend equivalents may be credited in respect of shares of Common Stock covered by a Restricted Stock Unit Award, as determined by the Board and contained in the Restricted Stock Unit Award Document. At the sole discretion of the Board, such dividend equivalents may be converted into additional shares of Common Stock covered by the Restricted Stock Unit Award in such manner as determined by the Board. The Restricted

Stock Unit Award Document may provide that any additional shares of Common Stock covered by the Restricted Stock Unit Award credited by reason of such dividend equivalents will be subject to all of the same terms and conditions of the underlying Restricted Stock Unit Award Document to which they relate.

(vi) Termination of Participant's Continuous Service. Except as otherwise provided in the applicable Restricted Stock Unit Award Document, or other agreement between the Participant and the Company or any Affiliate, such portion of the Restricted Stock Unit Award that has not vested will be forfeited upon the Participant's termination of Continuous Service.

(c) **Performance Awards.**

(i) Performance Stock Awards. A Performance Stock Award is a Stock Award that is payable (including that may be granted, vest or exercised) contingent upon the attainment during a Performance Period of the achievement of certain performance goals. A Performance Stock Award may, but need not, require the completion of a specified period of Continuous Service. The length of any Performance Period, the performance goals to be achieved during the Performance Period, and the measure of whether and to what degree such performance goals have been attained will be conclusively determined by the Committee or the Board, in its sole discretion. In addition, to the extent permitted by applicable law and the applicable Award Document, the Board may determine that a Performance Stock Award may be payable in cash.

(ii) Performance Cash Awards. A Performance Cash Award is a cash award that is granted and/or becomes payable contingent upon the attainment during a Performance Period of the achievement of certain performance goals. A Performance Cash Award may also require the completion of a specified period of Continuous Service. At the time of grant of a Performance Cash Award, the length of any Performance Period, the performance goals to be achieved during the Performance Period, and the measure of whether and to what degree such performance goals have been attained will be conclusively determined by the Committee or the Board, in its sole discretion. The Board may specify the form of payment of Performance Cash Awards, which may be cash or other property, or may provide for a Participant to have the option for his or her Performance Cash Award, or such portion thereof as the Board may specify, to be paid in whole or in part in cash or other property.

(iii) Board Discretion. The Committee or the Board, retains the discretion to reduce or eliminate the compensation or economic benefit due upon attainment of performance goals and to define the manner of calculating the performance criteria it selects to use for a Performance Period.

(d) **Other Stock Awards**. Other forms of Stock Awards valued in whole or in part by reference to, or otherwise based on, shares of Common Stock, including the appreciation in value thereof (e.g., options or stock rights with an exercise price or purchase price less than 100% of the Fair Market Value of shares of Common Stock at the time of grant) may be granted either alone or in addition to Stock Awards provided for under Section 5 and the preceding provisions of this Section 6. Subject to the provisions of the Plan, the Board will have sole and

complete authority to determine the persons to whom and the time or times at which such Other Stock Awards will be granted, the number of shares of Common Stock (or the cash equivalent thereof) to be granted pursuant to such Other Stock Awards and all other terms and conditions of such Other Stock Awards.

7. COVENANTS OF THE COMPANY.

(a) **Availability of Shares**. The Company will keep available at all times the number of shares of Common Stock reasonably required to satisfy then-outstanding Stock Awards.

(b) **Securities Law Compliance**. No Award may be exercised or shares of Common Stock issued pursuant to an Award unless (a) a registration statement under the Securities Act shall at the time of such exercise or issuance be in effect with respect to the shares issuable pursuant to the Award or (b) in the opinion of legal counsel to the Company , the shares of Common Stock issuable pursuant to the Award may be issued in accordance with the terms of an applicable exemption from the registration requirements of the Securities Act. The Company will seek to obtain from each regulatory commission or agency having jurisdiction over the Plan such authority as may be required to grant Stock Awards and to issue and sell shares of Common Stock upon exercise of the Stock Awards; provided, however, that this undertaking will not require the Company to register under the Securities Act the Plan, any Stock Award or any shares of Common Stock issued or issuable pursuant to any such Stock Award. If, after reasonable efforts and at a reasonable cost, the Company is unable to obtain from any such regulatory commission or agency the authority that counsel for the Company deems necessary for the lawful issuance and sale of shares of Common Stock under the Plan, the Company will be relieved from any liability for failure to issue and sell Common Stock upon exercise of such Stock Awards unless and until such authority is obtained. A Participant will not be eligible for the grant of an Award or the subsequent issuance of cash or shares of Common Stock pursuant to the Award if such grant or issuance would be in violation of any applicable securities law.

(c) **No Obligation to Notify or Minimize Taxes**. The Company will have no duty or obligation to any Participant to advise such holder as to the time or manner of exercising such Stock Award. Furthermore, the Company will have no duty or obligation to warn or otherwise advise such holder of a pending termination or expiration of an Award or a possible period in which the Award may not be exercised. The Company has no duty or obligation to, and does not undertake to, provide tax advice or to minimize the tax consequences of an Award to the holder of such Award.

8. MISCELLANEOUS.

(a) **Repurchase Rights**. Prior to the Initial Public Offering Date, shares of Common Stock issued under the Plan may be subject to a right of first refusal, one or more repurchase options or reacquisition rights, drag-along rights, or other conditions and restrictions as determined by the Board in its discretion at the time the Award is granted. The Company shall have the right to assign at any time any repurchase right or other right that it may have with respect to a share of Common Stock issued under the Plan, whether or not such right is then exercisable, to one or more Persons as may be selected by the Company. Upon request by the Company, each Participant shall execute any agreement evidencing such transfer restrictions

prior to the issuance of shares of Common Stock hereunder and shall promptly present to the Company any certificates representing shares of Common Stock acquired hereunder for the placement on such certificates of appropriate legends evidencing any such transfer restrictions. To the extent required by any agreement of stockholders or other agreement to which the Company is or may become subject, persons acquiring shares of Common Stock issued under the Plan will be required to enter into such agreement upon acquiring such shares of Common Stock as a condition of acquiring such shares of Common Stock.

(b) **Provision of Information**. To the extent required by applicable law, the Company will provide information to Participants regarding the Company.

(c) **Use of Proceeds from Sales of Common Stock**. Proceeds from the sale of shares of Common Stock pursuant to Stock Awards will constitute general funds of the Company.

(d) **Corporate Action Constituting Grant of Awards**. Corporate action constituting a grant by the Company of an Award to any Participant will be deemed completed as of the latest date that all necessary corporate action has occurred and all material terms of the Award (including, in the case of stock options, the exercise price thereof) are fixed, unless otherwise determined by the Board, regardless of when the documentation evidencing the Award is communicated to, or actually received or accepted by, the Participant. In the event that the corporate records (e.g., Board consents, resolutions or minutes) documenting the corporate action constituting the grant contain terms (e.g., exercise price, vesting schedule or number of shares) that are inconsistent with those in the Award Document as a result of a clerical error in the papering of the Award Document, the corporate records will control and the Participant will have no legally binding right to the incorrect term in the Award Document.

(e) **Stockholder Rights**. No Participant will be deemed to be the holder of, or to have any of the rights of a holder with respect to, any shares of Common Stock subject to a Stock Award unless and until (i) such Participant has satisfied all requirements for exercise of, or the issuance of shares of Common Stock under, the Stock Award pursuant to its terms, and (ii) the issuance of the shares of Common Stock subject to such Stock Award has been entered into the books and records of the Company.

(f) **No Employment or Other Service Rights**. Nothing in the Plan, any Award Document or any other instrument executed thereunder or in connection with any Award granted pursuant thereto will confer upon any Participant any right to continue to serve the Company or an Affiliate in the capacity in effect at the time the Award was granted or any other capacity or will affect the right of the Company or an Affiliate to terminate (i) the employment of an Employee for any reason or no reason, with or without notice and with or without cause, including, but not limited to, Cause, (ii) the service of a Consultant pursuant to the terms of such Consultant's agreement with the Company or an Affiliate, or (iii) the service of a Director pursuant to the organizational documents of the Company or an Affiliate (including the certificate of incorporation and bylaws), and any applicable provisions of the corporate law of the state in which the Company or the Affiliate is incorporated, as the case may be.

(g) **Change in Time Commitment**. If after the date of grant of any Award to the Participant, the Participant's regular level of time commitment in the performance of his or her services for the Company and any Affiliates is reduced (for example, and without limitation, if the Participant is an Employee of the Company and the Employee has a change in status from a full-time Employee to a part-time Employee or takes an extended leave of absence), or the Participant's role or primary responsibilities are changed to a level that, in the good faith determination by the Board does not justify the Participant's unvested Awards, the Board has the unilateral right, which right shall be exercised in its sole discretion, to (i) make a corresponding reduction in the number of shares or cash amount subject to any portion of such Award that is scheduled to vest or become payable after the date of such change in time commitment, and (ii) in lieu of or in combination with such a reduction, extend the vesting or payment schedule applicable to such Award. In the event of any such reduction, the Participant will have no right with respect to any portion of the Award that is so reduced or extended.

(h) **Incentive Stock Option Limitations**. To the extent that the aggregate Fair Market Value (determined at the time of grant) of Common Stock with respect to which Incentive Stock Options are exercisable for the first time by any Optionholder during any calendar year (under all plans of the Company and any Affiliates) exceeds $100,000 (or such other limit established in the Code) or otherwise does not comply with the rules governing Incentive Stock Options, the Options or portions thereof that exceed such limit (according to the order in which they were granted) or otherwise do not comply with such rules will be treated as Nonstatutory Stock Options, notwithstanding any contrary provision of the applicable Option Agreement(s).

(i) **Investment Assurances**. The Company may require a Participant, as a condition of exercising or acquiring shares of Common Stock under any Stock Award, (i) to give written assurances satisfactory to the Company (A) as to the Participant's knowledge and experience in financial and business matters and/or to employ a purchaser representative reasonably satisfactory to the Company who is knowledgeable and experienced in financial and business matters and (B) that he or she is capable of evaluating, alone or together with the purchaser representative, the merits and risks of exercising the Stock Award, and (ii) to give written assurances satisfactory to the Company stating that the Participant is acquiring the shares of Common Stock subject to the Stock Award for the Participant's own account and not with any present intention of selling or otherwise distributing the shares of Common Stock. The foregoing requirements, and any assurances given pursuant to such requirements, will be inoperative if (x) the issuance of the shares of Common Stock upon the exercise of a Stock Award or acquisition of shares of Common Stock under the Stock Award has been registered under a then currently effective registration statement under the Securities Act, or (y) as to any particular requirement, a determination is made by counsel for the Company that such requirement need not be met in the circumstances under the then applicable securities laws. The Company may, upon advice of counsel to the Company, place legends on stock certificates issued under the Plan as such counsel deems necessary or appropriate in order to comply with applicable securities laws, including, but not limited to, legends restricting the transfer of the shares of Common Stock.

(j) **Withholding Obligations**. Unless prohibited by the terms of an Award Document, the Company may, in its sole discretion, satisfy any U.S. federal, state, local, foreign or other tax withholding obligation relating to an Award by any of the following means or by a

combination of such means: (i) causing the Participant to tender a cash payment; (ii) withholding shares of Common Stock from the shares of Common Stock issued or otherwise issuable to the Participant in connection with the Award (only up to the amount permitted that will not cause an adverse accounting consequence or cost); (iii) withholding cash from an Award settled in cash; (iv) withholding payment from any amounts otherwise payable to the Participant, including proceeds from the sale of shares of Common Stock issued pursuant to a Stock Award; or (v) by such other method as may be set forth in the Award Document.

(k) **Electronic Delivery**. Any reference herein to a "written" agreement or document will include any agreement or document delivered electronically, filed publicly at www.sec.gov (or any successor website thereto), or posted on the Company's intranet (or other shared electronic medium controlled by the Company to which the Participant has access).

(l) **Deferrals**. To the extent permitted by applicable law, the Board, in its sole discretion, may determine that the delivery of shares of Common Stock or the payment of cash, upon the exercise, vesting or settlement of all or a portion of any Award may be deferred and may establish programs and procedures for deferral elections to be made by Participants. Deferrals by Participants will be made in accordance with Section 409A of the Code (to the extent applicable to a Participant). Consistent with Section 409A of the Code, the Board may provide for distributions while a Participant is still an employee or otherwise providing services to the Company. The Board is authorized to make deferrals of Awards and determine when, and in what annual percentages, Participants may receive payments, including lump sum payments, following the Participant's termination of Continuous Service, and implement such other terms and conditions consistent with the provisions of the Plan and in accordance with applicable law.

(m) **Compliance with Section 409A**. Unless otherwise expressly provided for in an Award Document, or other agreement between the Participant and the Company or any Affiliate, the Plan and Award Documents will be interpreted to the greatest extent possible in a manner that makes the Plan and the Awards granted hereunder exempt from Section 409A of the Code, and, to the extent not so exempt, in compliance with Section 409A of the Code. If the Board determines that any Award granted hereunder is not exempt from and is therefore subject to Section 409A of the Code, the Award Document evidencing such Award will incorporate the terms and conditions necessary to avoid the consequences specified in Section 409A(a)(1) of the Code, and to the extent an Award Document is silent on terms necessary for compliance, such terms are hereby incorporated by reference into the Award Document. Notwithstanding anything to the contrary in the Plan (and unless the Award Document specifically provides otherwise), if the shares of Common Stock are publicly traded, and if a Participant holding an Award that constitutes "deferred compensation" under Section 409A of the Code is a "specified employee" for purposes of Section 409A of the Code, no distribution or payment of any amount that is due because of a "separation from service" (as defined in Section 409A of the Code without regard to alternative definitions thereunder) will be issued or paid before the date that is six (6) months following the date of such Participant's "separation from service" or, if earlier, the date of the Participant's death, unless such distribution or payment can be made in a manner that complies with Section 409A of the Code, and any amounts so deferred will be paid in a lump sum on the day after such six (6) month period elapses, with the balance paid thereafter on the original schedule.

(n) **Clawback/Recovery**. All Awards granted under the Plan will be subject to recoupment in accordance with any clawback policy that the Company is required to adopt pursuant to the listing standards of any national securities exchange or association on which the Company's securities are listed or as is otherwise required by the Dodd-Frank Wall Street Reform and Consumer Protection Act or other applicable law. In addition, the Board may impose such other clawback, recovery or recoupment provisions in an Award Document as the Board determines necessary or appropriate, including, but not limited to, a reacquisition right in respect of previously acquired shares of Common Stock or other cash or property upon the occurrence of Cause. No recovery of compensation under such a clawback policy will be an event giving rise to a right to resign for "good reason" or "constructive termination" (or similar term) under any agreement with the Company or an Affiliate.

9. ADJUSTMENTS UPON CHANGES IN COMMON STOCK; OTHER CORPORATE EVENTS.

(a) **Capitalization Adjustments**. In the event of a Capitalization Adjustment, the Board will appropriately and proportionately adjust: (i) the class(es) and maximum number of securities subject to the Plan pursuant to Section 3(a); (ii) the class(es) and maximum number of securities that may be issued pursuant to the exercise of Incentive Stock Options pursuant to Section 3(c); and (iii) the class(es) and number of securities or other property and value (including price per share of stock) subject to outstanding Stock Awards. The Board will make such adjustments, and its determination will be final, binding and conclusive.

(b) **Dissolution or Liquidation**. Except as otherwise provided in the Stock Award Document, or other agreement between the Participant and the Company or any Affiliate, in the event of a dissolution or liquidation of the Company, all outstanding Stock Awards (other than Stock Awards consisting of vested and outstanding shares of Common Stock not subject to a forfeiture condition or the Company's right of repurchase) will terminate immediately prior to the completion of such dissolution or liquidation, and the shares of Common Stock subject to the Company's repurchase rights or subject to a forfeiture condition may be repurchased or reacquired by the Company notwithstanding the fact that the holder of such Stock Award is providing Continuous Service; provided, however, that the Board may, in its sole discretion, cause some or all Stock Awards to become fully vested, exercisable and/or no longer subject to repurchase or forfeiture (to the extent such Stock Awards have not previously expired or terminated) before the dissolution or liquidation is completed but contingent on its completion.

(c) **Corporate Transaction**. The following provisions will apply to Stock Awards in the event of a Corporate Transaction unless otherwise provided in the instrument evidencing the Stock Award or any other written agreement between the Company or any Affiliate and the Participant or unless otherwise expressly provided by the Board at the time of grant of a Stock Award. In the event of a Corporate Transaction, then, notwithstanding any other provision of the Plan, the Board will take one or more of the following actions with respect to each outstanding Stock Award, contingent upon the closing or completion of the Corporate Transaction:

(i) arrange for the surviving corporation or acquiring corporation (or the surviving or acquiring corporation's parent company) to assume or continue the Stock Award or to substitute a similar stock award for the Stock Award (including, but not limited to, an award to

acquire the same consideration per share paid to the stockholders of the Company pursuant to the Corporate Transaction);

(ii) arrange for the assignment of any reacquisition or repurchase rights held by the Company in respect of shares of Common Stock issued pursuant to the Stock Award to the surviving corporation or acquiring corporation (or the surviving or acquiring corporation's parent company);

(iii) accelerate the vesting, in whole or in part, of the Stock Award (and, if applicable, the time at which the Stock Award may be exercised) to a date prior to the effective time of such Corporate Transaction as the Board will determine, with such Stock Award terminating if not exercised (if applicable) at or prior to the effective time of the Corporate Transaction, and with such accelerated vesting (and if applicable, such exercise) reversed if the Corporate Transaction does not become effective;

(iv) arrange for the lapse, in whole or in part, of any reacquisition or repurchase rights held by the Company with respect to the Stock Award;

(v) cancel or arrange for the cancellation of the Stock Award, to the extent not vested or not exercised prior to the effective time of the Corporate Transaction, in exchange for such cash consideration, if any, as the Board, in its reasonable determination, may consider appropriate as an approximation of the value of the canceled Stock Award, taking into account the value of the shares of Common Stock subject to the canceled Stock Award, the possibility that the Stock Award might not otherwise vest in full, and such other factors as the Board deems relevant;

(vi) cancel or arrange for the cancellation of the Stock Award, to the extent not vested or not exercised prior to the effective time of the Corporate Transaction, in exchange for a payment, in such form as may be determined by the Board equal to the excess, if any, of (A) the value in the Corporate Transaction of the property the Participant would have received upon the exercise of the Stock Award immediately prior to the effective time of the Corporate Transaction, over (B) any exercise price payable by such holder in connection with such exercise; and

(vii) continuation of the Stock Award.

The Board need not take the same action or actions with respect to all Stock Awards or portions thereof or with respect to all Participants. The Board may take different actions with respect to the vested and unvested portions of a Stock Award.

In the absence of any affirmative determination by the Board at the time of a Corporate Transaction, each outstanding Stock Award will be assumed or an equivalent Stock Award will be substituted by such successor corporation or a parent or subsidiary of such successor corporation (the "**Successor Corporation**"), unless the Successor Corporation does not agree to assume the Stock Award or to substitute an equivalent Stock Award, in which case the vesting of such Stock Award will accelerate in its entirety (along with, if applicable, the time at which the Stock Award may be exercised) to a date prior to the effective time of such Corporate Transaction as the Board will determine (or, if the Board will not determine such a date, to the

date that is 5 days prior to the effective date of the Corporate Transaction), with such Stock Award terminating if not exercised (if applicable) at or prior to the effective time of the Corporate Transaction, and with such exercise reversed if the Corporate Transaction does not become effective.

(d) **Change in Control**. A Stock Award may be subject to additional acceleration of vesting and exercisability upon or after a Change in Control as may be provided in the Stock Award Document for such Stock Award or as may be provided in any other written agreement between the Company or any Affiliate and the Participant, but in the absence of such provision, no such acceleration will occur.

10. TERMINATION OR SUSPENSION OF THE PLAN.

The Board may suspend or terminate the Plan at any time. No Awards may be granted after the tenth (10th) anniversary of the earlier of (i) the date the Board adopts the Plan, or (ii) the date the stockholders approve the Plan. No Awards may be granted under the Plan while the Plan is suspended or after it is terminated.

11. EFFECTIVE DATE OF PLAN

The Plan came into existence on the Effective Date and no Award shall be granted hereunder prior to such date.

12. CHOICE OF LAW.

The laws of the State of Delaware will govern all questions concerning the construction, validity and interpretation of the Plan, without regard to that state's conflict of laws rules.

13. DEFINITIONS. As used in the Plan, the following definitions will apply to the capitalized terms indicated below:

(a) "**Affiliate**" means, at the time of determination, any direct or indirect "parent" or "subsidiary" of the Company, as such terms are defined in Rule 405 of the Securities Act. The Board will have the authority to determine the time or times at which "parent" or "subsidiary" status is determined within the foregoing definition.

(b) "**Award**" means a Stock Award or a Performance Cash Award.

(c) "**Award Document**" means a written agreement between the Company and a Participant, or a written notice issued by the Company to a Participant, evidencing the terms and conditions of an Award.

(d) "**Board**" means the Board of Directors of the Company.

(e) "**Capital Stock**" means each and every class and series of common stock and preferred stock of the Company, regardless of the number of votes per share.

(f) "**Capitalization Adjustment**" means any change that is made in, or other events that occur with respect to, shares of Common Stock subject to the Plan or subject to any Stock Award after the Effective Date without the receipt of consideration by the Company through merger, consolidation, reorganization, recapitalization, reincorporation, stock dividend, dividend in property other than cash, large nonrecurring cash dividend, stock split, reverse stock split, liquidating dividend, combination of shares, exchange of shares, change in corporate structure or other similar equity restructuring transaction, as that term is used in Financial Accounting Standards Board Accounting Standards Codification Topic 718 (or any successor thereto). Notwithstanding the foregoing, the conversion of any convertible securities of the Company will not be treated as a Capitalization Adjustment.

(g) "**Cause**" will have the meaning ascribed to such term in any written agreement between the Participant and the Company or any Affiliate defining such term and, in the absence of such agreement, such term means, with respect to a Participant, the occurrence of any of the following events: (i) Participant's failure substantially to perform his or her duties and responsibilities to the Company or any Affiliate or violation of a policy of the Company or any Affiliate; (ii) Participant's commission of any act of fraud, embezzlement, dishonesty or any other misconduct that has caused or is reasonably expected to result in injury to the Company or any Affiliate; (iii) unauthorized use or disclosure by Participant of any proprietary information or trade secrets of the Company or any other Person to whom the Participant owes an obligation of nondisclosure as a result of his or her relationship with the Company or any Affiliate; or (iv) Participant's breach of any of his or her obligations under any written agreement or covenant with the Company or any Affiliate. The determination as to whether a Participant is being terminated for Cause will be made in good faith by the Company and will be final and binding on the Participant. Any determination by the Company that the Continuous Service of a Participant was terminated with or without Cause for the purposes of outstanding Awards held by such Participant will have no effect upon any determination of the rights or obligations of the Company, any Affiliate or such Participant for any other purpose.

(h) "**Change in Control**" means the occurrence, in a single transaction or in a series of related transactions, of any one or more of the following events:

(i) any Exchange Act Person becomes the Owner, directly or indirectly, of securities of the Company representing more than 50% of the combined voting power of the Company's then outstanding securities. Notwithstanding the foregoing, a Change in Control will not be deemed to occur (A) on account of the acquisition of securities of the Company directly from the Company, (B) on account of the acquisition of securities of the Company by an investor, any affiliate thereof or any other Exchange Act Person that acquires the Company's securities in a transaction or series of related transactions the primary purpose of which is to obtain financing for the Company through the issuance of equity securities, or (C) solely because the level of Ownership held by any Exchange Act Person (the "**Subject Person**") exceeds the designated percentage threshold of the outstanding voting securities as a result of a repurchase or other acquisition of voting securities by the Company reducing the number of shares outstanding, provided that if a Change in Control would occur (but for the operation of this sentence) as a result of the acquisition of voting securities by the Company, and after such share acquisition, the Subject Person becomes the Owner of any additional voting securities that, assuming the repurchase or other acquisition had not occurred, increases the percentage of the then outstanding

voting securities Owned by the Subject Person over the designated percentage threshold, then a Change in Control will be deemed to occur;

(ii) there is consummated a merger, consolidation or similar transaction involving (directly or indirectly) the Company and, immediately after the consummation of such merger, consolidation or similar transaction, the stockholders of the Company immediately prior thereto do not Own, directly or indirectly, either (A) outstanding voting securities representing more than 50% of the combined outstanding voting power of the surviving Entity in such merger, consolidation or similar transaction or (B) more than 50% of the combined outstanding voting power of the parent of the surviving Entity in such merger, consolidation or similar transaction, in each case in substantially the same proportions as their Ownership of the outstanding voting securities of the Company immediately prior to such transaction;

(iii) there is consummated a sale, lease, exclusive license or other disposition of all or substantially all of the consolidated assets of the Company and its Subsidiaries, other than a sale, lease, license or other disposition of all or substantially all of the consolidated assets of the Company and its Subsidiaries to an Entity, more than 50% of the combined voting power of the voting securities of which are Owned by stockholders of the Company in substantially the same proportions as their Ownership of the outstanding voting securities of the Company immediately prior to such sale, lease, license or other disposition; or

(iv) individuals who, on the date on which the Board adopts the Plan, are members of the Board (the "**Incumbent Board**") cease for any reason to constitute at least a majority of the members of the Board; provided, however, that if the appointment or election (or nomination for election) of any new Board member was approved or recommended by a majority vote of the members of the Incumbent Board then still in office, such new member will, for purposes of the Plan, be considered as a member of the Incumbent Board.

Notwithstanding the foregoing definition or any other provision of the Plan, (A) the term Change in Control will not include a sale of assets, merger or other transaction effected exclusively for the purpose of changing the domicile of the Company, and (B) the definition of Change in Control (or any analogous term) in an individual written agreement between the Company or any Affiliate and the Participant will supersede the foregoing definition with respect to Awards subject to such agreement; provided, however, that if no definition of Change in Control or any analogous term is set forth in such an individual written agreement, the foregoing definition will apply.

If required for compliance with Section 409A of the Code, in no event will a Change in Control be deemed to have occurred if such transaction is not also a "change in the ownership or effective control of" the Company or "a change in the ownership of a substantial portion of the assets of" the Company as determined under U.S. Treasury Regulation Section 1.409A-3(i)(5) (without regard to any alternative definition thereunder). The Board may, in its sole discretion and without a Participant's consent, amend the definition of "Change in Control" to conform to the definition of "Change in Control" under Section 409A of the Code, and the regulations thereunder.

(i) "**Code**" means the U.S. Internal Revenue Code of 1986, as amended, including any applicable regulations and guidance thereunder.

(j) "**Committee**" means a committee of one (1) or more Directors to whom authority has been delegated by the Board in accordance with Section 2(c).

(k) "**Common Stock**" means the common stock of the Company.

(l) "**Company**" means Progenity, Inc., a Delaware corporation.

(m) "**Consultant**" means any person, including an advisor, who is (i) engaged by the Company or an Affiliate to render consulting or advisory services and is compensated for such services, or (ii) serving as a member of the board of directors of an Affiliate and is compensated for such services. However, service solely as a Director, or payment of a fee for such service, will not cause a Director to be considered a "Consultant" for purposes of the Plan. Notwithstanding the foregoing, from and after the Initial Public Offering Date, a person is treated as a Consultant under the Plan only if a Form Registration Statement on Form S-8 or a successor form under the Securities Act is available to register either the offer or the sale of the Company's securities to such person.

(n) "**Continuous Service**" means that the Participant's service with the Company or an Affiliate, whether as an Employee, Director or Consultant, is not interrupted or terminated. A change in the capacity in which the Participant renders service to the Company or an Affiliate as an Employee, Consultant or Director or a change in the Entity for which the Participant renders such service, provided that there is no interruption or termination of the Participant's service with the Company or an Affiliate, will not terminate a Participant's Continuous Service. For example, a change in status from an Employee of the Company to a Consultant of an Affiliate or to a Director will not constitute an interruption of Continuous Service. If the Entity for which a Participant is rendering services ceases to qualify as an Affiliate, as determined by the Board in its sole discretion, such Participant's Continuous Service will be considered to have terminated on the date such Entity ceases to qualify as an Affiliate. To the extent permitted by law, the Board or the chief executive officer of the Company, in that party's sole discretion, may determine whether Continuous Service will be considered interrupted in the case of (i) any leave of absence approved by the Board or chief executive officer, including sick leave, military leave or any other personal leave, or (ii) transfers between the Company, an Affiliate, or their successors. In addition, if required for exemption from or compliance with Section 409A of the Code, the determination of whether there has been a termination of Continuous Service will be made, and such term will be construed, in a manner that is consistent with the definition of "separation from service" as defined under U.S. Treasury Regulation Section 1.409A-1(h) (without regard to any alternative definition thereunder). A leave of absence will be treated as Continuous Service for purposes of vesting in a Stock Award only to such extent as may be provided in the applicable Award Document, the Company's leave of absence policy, in the written terms of any leave of absence agreement or policy applicable to the Participant, or as otherwise required by law.

(o) "**Corporate Transaction**" means the consummation, in a single transaction or in a series of related transactions, of any one or more of the following events:

(i) a sale or other disposition of all or substantially all, as determined by the Board in its sole discretion, of the consolidated assets of the Company and its Subsidiaries;

(ii) a sale or other disposition of at least 90% of the outstanding securities of the Company;

(iii) a merger, consolidation or similar transaction following which the Company is not the surviving corporation; or

(iv) a merger, consolidation or similar transaction following which the Company is the surviving corporation but the shares of Common Stock outstanding immediately preceding the merger, consolidation or similar transaction are converted or exchanged by virtue of the merger, consolidation or similar transaction into other property, whether in the form of securities, cash or otherwise.

To the extent required for compliance with Section 409A of the Code, in no event will an event be deemed a Corporate Transaction if such transaction is not also a "change in the ownership or effective control of" the Company or "a change in the ownership of a substantial portion of the assets of" the Company as determined under U.S. Treasury Regulation Section 1.409A-3(i)(5) (without regard to any alternative definition thereunder).

(p) "**Director**" means a member of the Board.

(q) "**Disability**" means, with respect to a Participant, the inability of such Participant to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment that can be expected to result in death or that has lasted or can be expected to last for a continuous period of not less than 12 months as provided in Sections 22(e)(3) and 409A(a)(2)(C)(i) of the Code, and will be determined by the Board on the basis of such medical evidence as the Board deems warranted under the circumstances.

(r) "**Effective Date**" means February 22, 2018.

(s) "**Employee**" means any person providing services as an employee of the Company or an Affiliate. However, service solely as a Director, or payment of a fee for such services, will not cause a Director to be considered an "Employee" for purposes of the Plan.

(t) "**Entity**" means a corporation, partnership, limited liability company or other entity.

(u) "**Exchange Act**" means the U.S. Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

(v) "**Exchange Act Person**" means any natural person, Entity or "group" (within the meaning of Section 13(d) or 14(d) of the Exchange Act), except that "Exchange Act Person" will not include (i) the Company or any Subsidiary of the Company, (ii) any employee benefit plan of the Company or any Subsidiary of the Company or any trustee or other fiduciary holding securities under an employee benefit plan of the Company or any Subsidiary of the Company, (iii) an underwriter temporarily holding securities pursuant to a registered public offering of such securities, (iv) an Entity Owned, directly or indirectly, by the stockholders of the Company in

substantially the same proportions as their Ownership of stock of the Company, (v) any natural person, Entity or "group" (within the meaning of Section 13(d) or 14(d) of the Exchange Act) that, as of the date of adoption by the Board of the Plan, is the Owner, directly or indirectly, of securities of the Company representing more than 50% of the combined voting power of the Company's then outstanding securities, (vi) Harry Stylli, or any trust or Entity wholly owned by him or as to which he is the trustee and beneficiary, or (vii) Athyrium Capital Management, LP, or any fund managed by Athyrium Capital Management, LP.

(w) "**Fair Market Value**" means, as of any date, the value of a share of Common Stock determined as follows:

(i) If the Common Stock is listed on any established stock exchange or traded on any established market, the Fair Market Value of a share of Common Stock as of any date of determination will be, unless otherwise determined by the Board, the closing sales price for such stock as quoted on such exchange or market (or the exchange or market with the greatest volume of trading in the Common Stock) on the date of determination, as reported in a source the Board deems reliable.

(ii) Unless otherwise provided by the Board, if there is no closing sales price for the Common Stock on the date of determination, then the Fair Market Value will be the closing selling price on the last preceding date for which such quotation exists.

(iii) In the absence of such markets for the Common Stock, the Fair Market Value will be determined by the Board in good faith and in a manner that complies with Sections 409A and 422 of the Code.

The Board shall make a good faith determination of the Fair Market Value of any securities or derivative securities (including options) of the Company. For any options granted after the Initial Public Offering Date, the Board shall base the Fair Market Value of any options on the "fair value" determined for financial accounting purposes under Accounting Standards Codification 718.

(x) "**Incentive Stock Option**" means an option granted pursuant to Section 5 of the Plan that is intended to be, and that qualifies as, an "incentive stock option" within the meaning of Section 422 of the Code.

(y) "**Initial Public Offering**" means the initial underwritten public offering of shares of Common Stock pursuant to a registration statement filed and declared effective pursuant to the Securities Act.

(z) "**Initial Public Offering Date**" means the date of the underwriting agreement between the Company and the underwriters(s) managing the Initial Public Offering, pursuant to which shares of Common Stock are priced for the Initial Public Offering; provided that the Initial Public Offering contemplated by such underwriting agreement occurs.

(aa) "**Nonstatutory Stock Option**" means any option granted pursuant to Section 5 of the Plan that does not qualify as an Incentive Stock Option.

(bb) "**Officer**" means a person who is an officer of the Company within the meaning of Section 16 of the Exchange Act (whether or not shares of Common Stock are publicly traded).

(cc) "**Option**" means an Incentive Stock Option or a Nonstatutory Stock Option to purchase shares of Common Stock granted pursuant to the Plan.

(dd) "**Option Agreement**" means an Award Document evidencing the terms and conditions of an Option grant. Each Option Agreement will be subject to the terms and conditions of the Plan.

(ee) "**Optionholder**" means a person to whom an Option is granted pursuant to the Plan or, if applicable, such other person who holds an outstanding Option.

(ff) "**Other Stock Award**" means an award based in whole or in part by reference to shares of Common Stock that is granted pursuant to the terms and conditions of Section 6(d).

(gg) "**Other Stock Award Document**" means an Award Document evidencing the terms and conditions of an Other Stock Award grant. Each Other Stock Award Document will be subject to the terms and conditions of the Plan.

(hh) "**Own**," "**Owned**," "**Owner**," "**Ownership**", a Person will be deemed to "Own," to have "Owned," to be the "Owner" of, or to have acquired "Ownership" of securities if such Person, directly or indirectly, through any contract, arrangement, understanding, relationship or otherwise, has or shares voting power, which includes the power to vote or to direct the voting, with respect to such securities.

(ii) "**Participant**" means a person to whom an Award is granted pursuant to the Plan or, if applicable, such other person who holds an outstanding Stock Award.

(jj) "**Performance Cash Award**" means an award of cash granted pursuant to the terms and conditions of Section 6(c)(ii).

(kk) "**Performance Period**" means the period of time selected by the Board over which the attainment of one or more performance goals will be measured for the purpose of determining a Participant's right to and the payment of a Stock Award or a Performance Cash Award. Performance Periods may be of varying and overlapping duration, at the sole discretion of the Board.

(ll) "**Performance Stock Award**" means a Stock Award granted under the terms and conditions of Section 6(c)(i).

(mm) "**Person**" means a "person" as defined in Section 3(a)(9) of the Exchange Act and used in Section 13(d) and 14(d) thereof, including a "group" as defined in Section 13(d) thereof.

(nn) "**Plan**" means this 2018 Equity Incentive Plan of Progenity, Inc. (Second Amended and Restated).

(oo) "**Restricted Stock Award**" means an award of shares of Common Stock that is granted pursuant to the terms and conditions of Section 6(a).

(pp) "**Restricted Stock Award Document**" means an Award Document evidencing the terms and conditions of a Restricted Stock Award grant. Each Restricted Stock Award Document will be subject to the terms and conditions of the Plan.

(qq) "**Restricted Stock Unit Award**" means a right to receive shares of Common Stock that is granted pursuant to the terms and conditions of Section 6(b).

(rr) "**Restricted Stock Unit Award Document**" means an Award Document evidencing the terms and conditions of a Restricted Stock Unit Award grant. Each Restricted Stock Unit Award Document will be subject to the terms and conditions of the Plan.

(ss) "**Securities Act**" means the U.S. Securities Act of 1933, as amended.

(tt) "**Stock Appreciation Right**" or "**SAR**" means a right to receive the appreciation on Common Stock that is granted pursuant to the terms and conditions of Section 5.

(uu) "**Stock Appreciation Right Award Document**" means an Award Document evidencing the terms and conditions of a Stock Appreciation Right grant. Each Stock Appreciation Right Award Document will be subject to the terms and conditions of the Plan.

(vv) "**Stock Award**" means any right to receive shares of Common Stock granted under the Plan, including an Incentive Stock Option, a Nonstatutory Stock Option, a Restricted Stock Award, a Restricted Stock Unit Award, a Stock Appreciation Right, a Performance Stock Award, or any Other Stock Award. The right to receive cash under the terms of a Stock Award that is actually settled in shares of Common Stock shall not disqualify such award from satisfying the definition of a "Stock Award".

(ww) "**Stock Award Document**" means an Award Document evidencing the terms and conditions of a Stock Award grant. Each Stock Award Document will be subject to the terms and conditions of the Plan.

(xx) "**Subsidiary**" means, with respect to the Company, (i) any corporation of which more than 50% of the outstanding capital stock having ordinary voting power to elect a majority of the board of directors of such corporation (irrespective of whether, at the time, stock of any other class or classes of such corporation will have or might have voting power by reason of the happening of any contingency) is at the time, directly or indirectly, Owned by the Company, and (ii) any partnership, limited liability company or other Entity in which the Company has a direct or indirect interest (whether in the form of voting or participation in profits or capital contribution) of more than 50%.

(yy) "**Ten Percent Stockholder**" means a Person who Owns (or is deemed to Own pursuant to Section 424(d) of the Code) stock possessing more than 10% of the total combined voting power of all classes of stock of the Company or any Affiliate.

END OF DOCUMENT

Exhibit 10.17

NEITHER THIS CREDIT AND SECURITY AGREEMENT NOR THE WARRANTS ISSUED HEREUNDER HAVE BEEN REGISTERED PURSUANT TO THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR QUALIFIED PURSUANT TO ANY APPLICABLE STATE SECURITIES LAW. THE WARRANTS ISSUED UNDER THIS CREDIT AND SECURITY AGREEMENT MAY BE RESOLD ONLY IF REGISTERED PURSUANT TO THE PROVISIONS OF THE SECURITIES ACT AND QUALIFIED PURSUANT TO APPLICABLE STATE SECURITIES LAWS OR IF AN EXEMPTION FROM SUCH REGISTRATION AND QUALIFICATION IS AVAILABLE.

CREDIT AND SECURITY AGREEMENT

dated as of

October 27, 2017

among

PROGENITY, INC.,
as the Borrower,

and

ATHYRIUM OPPORTUNITIES III CO-INVEST 1 LP,
as the Collateral Agent and as a Lender,

and

THE OTHER LENDERS PARTY HERETO

TABLE OF CONTENTS

CREDIT AND SECURITY AGREEMENT

THIS CREDIT AND SECURITY AGREEMENT, dated as of October 27, 2017 (this "Agreement") is by and among PROGENITY, INC., a Delaware corporation, as the Borrower, the Guarantors from time to time party hereto, ATHYRIUM OPPORTUNITIES III CO-INVEST 1 LP, a Delaware limited partnership, as a Lender and as Collateral Agent, and the other Lenders from time to time party hereto.

The parties hereto agree as follows:

ARTICLE 1
DEFINITIONS

1.1 Defined Terms. As used in this Agreement, the following terms have the meanings specified below:

"**Account**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Account Debtor**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Acquisition**", by any Person, means the acquisition by such Person, in a single transaction or in a series of related transactions, of (a) all or a portion of the Property of another Person, (b) all or a portion of a division or operating group of another Person, or (c) a majority of the voting stock or other controlling ownership interest in another Person (including the purchase of an option, warrant or convertible or similar type security to acquire such a controlling interest at the time it becomes exercisable by the holder thereof), whether by purchase of such equity or other ownership interest or upon the exercise of an option or warrant for, or conversion of securities into, such equity or other ownership interest, in each case, whether or not involving a merger or consolidation with such other Person and whether for cash, property, services, assumption of Indebtedness, securities or otherwise.

"**Advance Request**" means a written request signed by a Designated Financial Officer for the Term Loan in substantially the form of Exhibit B annexed hereto.

"**Affiliate**" means, with respect to a specified Person, another Person that Controls or is Controlled by or is under common Control with the Person specified.

"**Agreement**" has the meaning assigned to such term in the preamble hereto.

"**AOF III Co-Invest**" means Athyrium Opportunities III Co-Invest 1 LP, a Delaware limited partnership.

"**Applicable Rate**" means a rate per annum equal to 9.50%.

"**As-Extracted Collateral**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Athyrium Director**" means the director of the Borrower appointed by the Lenders and/or their Controlled Investment Affiliates (in each case making such appointment in their respective capacities as holders of the capital stock or other equity interests of the Borrower).

"**Avero**" means Mattison Pathology, LLP d/b/a Avero Diagnostics, a Texas limited liability partnership.

"**Avero Acquisition Agreement**" means that certain Purchase Agreement dated June 8, 2015 by and among Thomas R. Mattison, M.D., P.A., Michael T. Mattison, M.D., P.A., and Tanner L. Mattison, M.D., P.A., each a Texas professional association (collectively, the "Practices"), and Thomas R. Mattison, M.D., Michael T. Mattison, M.D., and Tanner L. Mattison, M.D., each a resident of the State of Texas (collectively, the "Owners" and, together with the Practices, the "Owner Parties"), Avero Holdings, and Avero.

"**Avero Contracts**" means, collectively, the Avero Acquisition Agreement, the Avero Management Services Contract and the Avero Nominee Agreement.

"**Avero Earn-Out Payments**" means any additional consideration in an aggregate amount up to $2,250,000 during the 2017 and 2018 fiscal years to be paid pursuant to the Avero Acquisition Agreement.

"**Avero Holdings**" means Avero Laboratory Holdings LLC, a Delaware limited liability company and a Wholly Owned Domestic Subsidiary of the Borrower.

"**Avero Management Services Contract**" means that certain Management Services Agreement, dated June 8, 2015 by and between Avero Holdings and Avero.

"**Avero Nominee Agreement**" means that certain Nominee Agreement, dated June 8, 2015 by and among Avero Holdings, Avero, and the Owner Parties.

"**Board**" means the Board of Governors of the Federal Reserve System of the United States of America.

"**Borrower**" means Progenity, Inc., a Delaware corporation.

"**Business Day**" means any day that is not a Saturday, Sunday or other day on which commercial banks in New York, New York are authorized or required by law to remain closed.

"**Capital Expenditures**" means, for any period, the sum for the Credit Parties and their respective Subsidiaries (determined on a consolidated basis without duplication in accordance with GAAP) of the aggregate amount of expenditures made during such period (including the aggregate amount of Capital Lease Obligations incurred during such period) to acquire or construct fixed assets, plant and Equipment (including renewals, improvements and replacements, but excluding repairs) computed in accordance with GAAP; *provided*, *that*, such term shall not include any such expenditures in connection with (a) a replacement or repair of Property affected by a Casualty Event, (b) Permitted Acquisitions, or (c) the purchase of property, tools or Equipment to the extent financed with Net Cash Payments of a Disposition of obsolete or worn-out property (including leasehold interests), tools or Equipment as contemplated in Section 2.4(b)(i).

"**Capital Lease Obligations**" of any Person, means the obligations of such Person to pay rent or other amounts under any lease of (or other arrangement conveying the right to use) real or personal

property, or a combination thereof, which obligations are required to be classified and accounted for as capital leases on a balance sheet of such Person under GAAP, and the amount of such obligations shall be the capitalized amount thereof determined in accordance with GAAP.

"**Carmenta**" means Carmenta Bioscience, Inc., a Delaware corporation and Wholly Owned Domestic Subsidiary of the Borrower as of immediately prior to the Effective Time.

"**Carmenta Earn-Out Payments**" means any additional consideration in the aggregate amount of up to $4,000,000 during the 2017 and 2018 fiscal years, to be paid in connection with Borrower's acquisition of Carmenta.

"**Casualty Event**" means, with respect to any Property of any Person, any loss of or damage to, or any condemnation or other taking of, such Property for which such Person or any of its Subsidiaries receives insurance proceeds, or proceeds of a condemnation award or other compensation.

"**CCP**" has the meaning assigned to such term in Section 7.8(d).

"**Certificated Security**" has the meaning assigned to such term in Article 8 of the UCC as in effect in the State of New York.

"**CFC**" means a "controlled foreign corporation" as defined in Section 957 of the Code.

"**CHAMPVA**" means, collectively, the Civilian Health and Medical Program of the Department of Veterans Affairs, a program of medical benefits covering certain dependents of former members of the armed services administered by the United States Department of Veterans Affairs, and all laws, rules, regulations, manuals, orders, or requirements pertaining to such program.

"**Change in Law**" means the occurrence, after the Closing Date, of any of the following: (a) the adoption or taking effect of any law, rule, regulation or treaty, (b) any change in any law, rule, regulation or treaty or in the administration, interpretation, implementation or application thereof by any Governmental Authority or (c) the making or issuance of any request, rule, guideline or directive (whether or not having the force of law) by any Governmental Authority; *provided*, *that*, notwithstanding anything herein to the contrary, (x) the Dodd-Frank Wall Street Reform and Consumer Protection Act and all requests, rules, guidelines or directives thereunder or issued in connection therewith and (y) all requests, rules, guidelines or directives promulgated by the Bank for International Settlements, the Basel Committee on Banking Supervision (or any successor or similar authority) or the United States or foreign regulatory authorities, in each case pursuant to Basel III, shall in each case be deemed to be a "Change in Law", regardless of the date enacted, adopted or issued.

"**Change of Control**" means the occurrence of any of the following events:

(a) at any time prior to the consummation of a Qualified IPO, the Existing Owners shall cease to own and control, of record and beneficially, directly or indirectly, capital stock of the Borrower representing greater than 50% of the aggregate Total Voting Power represented by the issued and outstanding capital stock of the Borrower on a fully diluted basis; or

(b) at any time after the consummation of a Qualified IPO, any "person" or "group" (as such terms are used in Sections 13(d) and 14(d) of the Securities Exchange Act of 1934), other than the Existing Owners, is or becomes the "beneficial owner" (as defined in Rules 13d-3 and 13d-5 under the Securities Exchange Act of 1934, except that a person or group shall be deemed to have "beneficial ownership" of all securities that such person or group has the right to acquire (such right, an "option

right"), whether such right is exercisable immediately or only after the passage of time), directly or indirectly, of capital stock or other equity interests of the Borrower representing 35% or more of the aggregate Total Voting Power represented by the issued and outstanding capital stock and other equity interests of the Borrower on a fully diluted basis (and taking into account all such securities that such person or group has the right to acquire pursuant to any option right); or

(c) at any time prior to the consummation of a Qualified IPO, a majority of the seats (other than vacant seats) on the board of directors of the Borrower shall cease to be occupied by Persons who were appointed by the Existing Owners; or

(d) the Borrower shall fail to own, directly or indirectly, 100% of the outstanding capital stock or other equity interests of each of the other Credit Parties, unless such transaction constitutes a Permitted Disposition or a dissolution or liquidation otherwise permitted under this Agreement; or

(e) (i) the sale of all or substantially all of the business or assets of the Borrower in one transaction or a series of transactions; or (ii) the sale of all or substantially all of the business or assets of any Guarantor in one transaction or a series of transactions, unless such transactions constitute Permitted Dispositions.

"**Chattel Paper**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**CLIA**" means the Federal Clinical Laboratory Improvement Amendments of 1988, as the same may be amended, modified or supplemented from time to time, and any successor statute thereto, and any and all rules or regulations promulgated from time to time thereunder.

"**Closing Date**" means the date of this Agreement.

"**Code**" means the Internal Revenue Code of 1986, as amended from time to time.

"**Collateral**" means, collectively, all of the Property in which Liens are purported to be granted hereunder and under the other Loan Documents as security for the Obligations (but, for the avoidance of doubt, not including any Excluded Collateral).

"**Collateral Agent**" has the meaning assigned to such term in Section 11.1.

"**Collections**" means all amounts received or deemed received by the Credit Parties and their respective Subsidiaries with respect to any accounts, including, without limitation, any Health-Care-Insurance Receivable.

"**Comerica**" means Comerica Bank.

"**Comerica Real Estate Loan Documents**" means, collectively, the Comerica Real Estate Note, the Comerica Real Estate Security Documents, and each other document, instrument, agreement and certificate entered into in connection therewith from time to time, each as amended, modified, supplemented, extended, renewed, refinanced, refunded, replaced or restated from time to time.

"**Comerica Real Estate Note**" means that certain Installment Note, dated as of January 28, 2014, by the Borrower in favor of Comerica, in the original principal amount of $1,750,000, as amended, modified, supplemented, extended, renewed, refinanced, refunded, replaced or restated from time to time.

"**Comerica Real Estate Security Documents**" means, collectively, that certain Continuing Collateral Mortgage, dated as of January 27, 2014, by the Borrower in favor of Comerica, that certain Letter Agreement, dated as of January 28, 2014, by and between the Borrower and Comerica, and each other document and instrument entered into in connection therewith purporting to grant a Lien on the Borrower's real property to secure the Comerica Real Estate Note, each as amended, modified, supplemented, extended, renewed, refinanced, refunded, replaced or restated from time to time.

"**Commercial Tort Claim**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Compliance Certificate**" means a certificate signed by a Designated Financial Officer, in substantially the form of Exhibit D annexed hereto.

"**Connection Income Taxes**" means Other Connection Taxes that are imposed on or measured by net income (however denominated) or that are franchise Taxes or branch profits Taxes.

"**Control**" means the possession, directly or indirectly, of the power to direct or cause the direction of the management or policies of a Person, whether through the ability to exercise voting power, by contract or otherwise. "**Controlling**" and "**Controlled**" have meanings correlative thereto. A Person who owns or holds capital stock, beneficial interests or other securities representing ten percent (10%) or more of the Total Voting Power of another Person shall be deemed, for purposes of this Agreement, to "**control**" such other Person.

"**Control Agreement**" means with respect to any Controlled Account, an agreement in form and substance reasonably satisfactory to the Lenders, executed and delivered by the Credit Parties, the depository institution at which such Controlled Account is maintained and the Collateral Agent, for the benefit of the Lenders, as such agreement may be amended, supplemented or otherwise modified from time to time.

"**Controlled Account**" means a Deposit Account which is not an Excluded Account.

"**Controlled Investment Affiliate**" means, as to any Person, any other Person that (a) directly or indirectly, is controlled by such Person and (b) is organized by such Person primarily for the purpose of making equity investments in one or more companies. For purposes of this definition, "control" of a Person means the power, directly or indirectly, to direct or cause the direction of the management and policies of such Person whether by contract or otherwise.

"**Copyrights**" means all copyrights, whether statutory or common law, owned by or assigned to the Credit Parties and their respective Subsidiaries, and all exclusive and nonexclusive licenses to the Credit Parties and their respective Subsidiaries from third parties or rights to use copyrights owned by such third parties, including, without limitation, the registrations, applications and licenses listed on Schedule 5.5 hereto, along with any and all (a) renewals and extensions thereof, (b) income, royalties, damages, claims and payments now and hereafter due and/or payable with respect thereto, including, without limitation, damages and payments for past, present or future infringements thereof, (c) rights to sue for past, present and future infringements thereof, and (d) foreign copyrights and any other rights corresponding thereto throughout the world.

"**Co-Sale Agreement**" means that certain Third Amended and Restated Co-Sale Agreement, dated as of the Closing Date, by and among the Borrower, the Investors (as defined therein) and the Key Holders (as defined therein).

"**Credit Parties**" means the Borrower and each Guarantor.

"**Debtor Relief Laws**" means the Bankruptcy Code of the United States of America, and all other liquidation, conservatorship, bankruptcy, assignment for the benefit of creditors, moratorium, rearrangement, receivership, insolvency, reorganization, or similar debtor relief laws of the United States or other applicable jurisdictions from time to time in effect.

"**Default**" means any event or condition which constitutes an Event of Default or which upon notice, lapse of time or both would, unless cured or waived, become an Event of Default.

"**Defaulting Lender**" means, any Lender that (a) has failed to (i) fund all or any portion of its Loans within two (2) Business Days of the date such Loans were required to be funded hereunder unless such Lender notifies the Collateral Agent and the Borrower in writing that such failure is the result of such Lender's determination that one or more conditions precedent to funding (each of which conditions precedent, together with any applicable default, shall be specifically identified in such writing) has not been satisfied, or (ii) pay to the Collateral Agent or any other Lender any other amount required to be paid by it hereunder within two (2) Business Days of the date when due, (b) has notified the Borrower or the Collateral Agent in writing that it does not intend to comply with its funding obligations hereunder, or has made a public statement to that effect (unless such writing or public statement relates to such Lender's obligation to fund a Loan hereunder and states that such position is based on such Lender's determination that a condition precedent to funding (which condition precedent, together with any applicable default, shall be specifically identified in such writing or public statement) cannot be satisfied), (c) has failed, within three (3) Business Days after written request by the Collateral Agent or the Borrower, to confirm in writing to the Collateral Agent and the Borrower that it will comply with its prospective funding obligations hereunder (*provided*, *that*, such Lender shall cease to be a Defaulting Lender pursuant to this clause (c) upon receipt of such written confirmation by the Collateral Agent and the Borrower), or (d) has, or has a direct or indirect parent company that has, (i) become the subject of a proceeding under any Debtor Relief Law, or (ii) had appointed for it a receiver, custodian, conservator, trustee, administrator, assignee for the benefit of creditors or similar Person charged with reorganization or liquidation of its business or assets, including the Federal Deposit Insurance Corporation or any other state or federal regulatory authority acting in such a capacity; *provided*, *that*, a Lender shall not be a Defaulting Lender solely by virtue of the ownership or acquisition of any equity interest in that Lender or any direct or indirect parent company thereof by a Governmental Authority so long as such ownership interest does not result in or provide such Lender with immunity from the jurisdiction of courts within the United States or from the enforcement of judgments or writs of attachment on its assets or permit such Lender (or such Governmental Authority) to reject, repudiate, disavow or disaffirm any contracts or agreements made with such Lender. Any determination by the Collateral Agent that a Lender is a Defaulting Lender under any one or more of clauses (a) through (d) above shall be conclusive and binding absent manifest error, and such Lender shall be deemed to be a Defaulting Lender upon delivery of written notice of such determination to the Borrower and each Lender.

"**Deposit Account**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Designated Financial Officer**" means an individual holding one or more of the following offices with each of the Credit Parties or otherwise" having executive responsibilities for financial matters: chief financial officer, vice president of finance, principal accounting officer, treasurer, assistant treasurer or controller.

"**Designated Jurisdiction**" means any country or territory to the extent that such country or territory is the subject of any Sanction.

"**Direction Letter**" means that certain Direction Letter, dated as of the Closing Date, made by the Borrower to the Lenders.

"**Disclosed Matters**" means the environmental matters disclosed in Schedule 5.6(b).

"**Disposition**" means any sale, assignment, transfer, license, lease or other disposition of any property or assets, in each case, whether now owned or hereafter acquired, by any Credit Party or any Subsidiary, in each case to any Person other than to a Credit Party.

"**Distributions**" means, collectively, with respect to each Credit Party, all dividends, cash, options, warrants, rights, instruments, distributions, returns of capital or principal, income, interest, profits and other property, interests (debt or equity) or proceeds, including as a result of a split, revision, reclassification or other like change of the Pledged Collateral, from time to time received, receivable or otherwise distributed to such Credit Party in respect of or in exchange for any or all of the Pledged Collateral.

"**Document**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Dollar**" and "**$**" mean lawful money of the United States.

"**Domestic Subsidiary**" means any Subsidiary incorporated or organized under the laws of the United States, any State thereof or the District of Columbia.

"**Effective Time**" means the time when the conditions specified in Section 6.1 are satisfied (or waived in accordance with Section 10.2).

"**Electronic Chattel Paper**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Eligible Assets**" means assets (other than current assets) that are used or useful in the same or a related line of business as the Credit Parties and their respective Subsidiaries were engaged in on the Closing Date (or any business substantially related or incidental thereto).

"**Environmental Laws**" means all applicable laws, rules, regulations, codes, ordinances, orders, decrees, judgments, injunctions, notices or binding agreements issued, promulgated or entered into by any Governmental Authority, relating in any way to the environment, preservation or reclamation of natural resources, the handling, treatment, storage, disposal, release or threatened release of any Hazardous Material or to health and safety matters.

"**Environmental Liability**" means any liability, contingent or otherwise (including any liability for damages, costs of environmental remediation, fines, penalties or indemnities), of any Credit Party or any Subsidiary directly or indirectly resulting from or based upon (a) violation of any Environmental Law, (b) the generation, use, handling, transportation, storage, treatment or disposal of any Hazardous Materials, (c) exposure to any Hazardous Materials, (d) the release or threatened release of any Hazardous Materials into the environment or (e) any contract, agreement or other consensual arrangement pursuant to which liability is assumed or imposed with respect to any of the foregoing.

"**Equipment**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Equity Rights**" means, with respect to any Person, any subscriptions, options, warrants, commitments, preemptive rights or agreements of any kind (including any stockholders' or voting trust agreements) for the issuance or sale of, or securities convertible into, any additional shares of capital stock or other equity interests of any class, or partnership or other ownership interests of any type in, such Person.

"**ERISA**" means the Employee Retirement Income Security Act of 1974, as amended from time to time.

"**ERISA Affiliate**" means any trade or business (whether or not incorporated) that, together with the Credit Parties and their respective Subsidiaries, is treated as a single employer within the meaning of Section 414(b), (c), (m) or (o) of the Code. Notwithstanding the foregoing, for purposes of any liability related to a Multiemployer Plan under Title IV of ERISA, the term "**ERISA Affiliate**" means any trade or business that, together with the Credit Parties and their respective Subsidiaries, is treated as a single employer within the meaning of Section 4001(b) of ERISA.

"**ERISA Event**" means (a) a "**reportable event**", as defined in Section 4043 of ERISA or the regulations issued thereunder for which the notice requirement has not been waived with respect to any Pension Plan, (b) the failure to make the minimum required contributions (as defined in Section 412 of the Code or Section 302 of ERISA) to any Pension Plan, (c) the filing pursuant to Section 412(d) of the Code or Section 303(d) of ERISA of an application for a waiver of the minimum funding standard with respect to any Pension Plan, (d) the incurrence by any Credit Party, any Subsidiary or any ERISA Affiliate of any liability under Title IV of ERISA with respect to the termination of any Pension Plan, (e) the receipt by any Credit Party, any Subsidiary or any ERISA Affiliate from the PBGC or plan administrator of any notice relating to an intention to terminate any Pension Plan or Pension Plans or to appoint a trustee to administer any Pension Plan, or (f) the receipt by any Credit Party, any Subsidiary or any ERISA Affiliate of any notice, or the receipt by any Multiemployer Plan from any Credit Party, any Subsidiary or any ERISA Affiliate of any notice of Withdrawal Liability or a determination that a Multiemployer Plan is, or is expected to be, insolvent, within the meaning of Title IV of ERISA.

"**Event of Default**" has the meaning assigned to such term in Section 9.1.

"**Excluded Account**" has the meaning assigned to such term in Section 7.13.

"**Excluded Collateral**" has the meaning assigned to such term in Section 4.1.

"**Excluded Subsidiary**" means (a) any FSHCO and (b) any Foreign Subsidiary.

"**Excluded Taxes**" means, any of the following Taxes imposed on or with respect to, or required to be withheld or deducted from a payment to, a Recipient, (a) Taxes imposed on (or measured by) net income (however denominated), franchise Taxes, and branch profits Taxes, in each case, (i) imposed by the jurisdiction (or any political subdivision thereof) under the laws of which such Lender is organized or in which its principal office is located or in which its lending office is located or (ii) that are Other Connection Taxes, (b) U.S. federal withholding Taxes imposed on amounts payable to or for the account of such Lender with respect to an applicable interest in a Loan or commitment pursuant to a law in effect on the date on which (i) such Lender acquires such interest in the Loan or commitment (other than pursuant to an assignment request by the Borrower under Section 2.8) or (ii) such Lender changes its lending office, except in each case to the extent that, pursuant to Section 2.6, amounts with respect to such Taxes were payable either to such Lender's assignor immediately before such Lender became a party hereto or to such Lender immediately before it changed its lending office, (c) Taxes attributable to

Lender's failure to comply with Section 2.6(d), and (d) any U.S. federal withholding Taxes imposed under FATCA.

"**Existing Debt**" means (a) Indebtedness of the Credit Parties and their respective Subsidiaries existing as of the Effective Time which is being repaid in full with the proceeds of the Term Loan and (b) Indebtedness of the Credit Parties and their respective Subsidiaries existing as of the Effective Time which is permitted to remain outstanding after the Effective Time under Section 8.1(b).

"**Existing Owners**" means Stylli, Athyrium Opportunities Fund (A) LP, Athyrium Opportunities Fund (B) LP, Beaver Creek Intermediate Fund, Ltd., MAK Capital Management, LLC, The Moses Trust and any Controlled Investment Affiliates of any such Person.

"**FAC Regulations**" has the meaning assigned to such term in Section 5.20.

"**FATCA**" means Sections 1471 through 1474 of the Code, as of the Closing Date (or any amended or successor version that is substantively comparable and not materially more onerous to comply with), any current or future regulations or official interpretations thereof, any agreements entered into pursuant to Section 1471(b)(1) of the Code and any intergovernmental agreement entered into in connection with the implementation of the foregoing.

"**First Priority**" means, with respect to any Lien purported to be created in any Collateral pursuant to any Loan Document, that such Lien is the most senior Lien (other than Permitted Liens) to which such Collateral is subject.

"**Fixtures**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Foreign Subsidiary**" means any Subsidiary that is not a Domestic Subsidiary.

"**FSHCO**" means any Domestic Subsidiary (including but not limited to any entity that is treated as a disregarded entity for U.S. federal income tax purposes) substantially all of the assets of which consist, directly or indirectly, of capital stock or other equity interests of one or more CFCs or Indebtedness of such CFCs (or are treated as consisting of such assets for U.S. federal income tax purposes).

"**GAAP**" means generally accepted accounting principles in the United States of America, consistently applied and subject to Section 1.3.

"**General Intangible**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Goods**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Government Depository Account**" means a Deposit Account in the name of a Credit Party maintained at a bank that is reasonably acceptable to the Lenders (it being agreed that Comerica Bank is acceptable to the Lenders), to which all Government Receivables are sent.

"**Government Investigation**" has the meaning set forth in Section 5.6(c) hereto.

"**Government Receivable**" means any Health-Care-Insurance Receivable that is payable by a Governmental Payor.

"**Governmental Authority**" means the government of the United States of America, any other nation or any political subdivision thereof, whether state or local, and any agency, authority, instrumentality, regulatory body, court, central bank or other entity exercising executive, legislative, judicial, taxing, regulatory or administrative powers or functions of or pertaining to government.

"**Governmental Payor**" means Medicare, Medicaid, TRICARE, CHAMPVA, any state health plan adopted pursuant to Title XIX of the Social Security Act, any other state or federal health care program and any other Governmental Authority which presently or in the future maintains a Third Party Payor Program.

"**Guarantee**" means a guarantee, an endorsement, a contingent agreement to purchase or to furnish funds for the payment or maintenance of, or otherwise to be or become contingently liable under or with respect to, Indebtedness, other obligations, net worth, working capital or earnings of any Person, or a guarantee of the payment of dividends or other distributions upon the capital stock or other equity interests of any Person, or an agreement to purchase, sell or lease (as lessee or lessor) property, products, materials, supplies or services primarily for the purpose of enabling a debtor to make payment of such debtor's obligations or an agreement to assure a creditor against loss, and including, without limitation, causing a bank or other financial institution to issue a letter of credit or other similar instrument for the benefit of another Person, but excluding endorsements for collection or deposit in the ordinary course of business. The terms "**Guarantee**" and "**Guaranteed**" used as a verb shall have a correlative meaning.

"**Guarantor**" means, collectively, (a) each Person identified as a "Guarantor" on the signature pages hereto, (b) each Wholly Owned Domestic Subsidiary as may from time to time become party to this Agreement pursuant to Section 7.10 or otherwise deliver a guaranty of the Obligations in accordance with the provisions of Section 7.10 and (c) the successors and permitted assigns of the foregoing, in each case, until such time as the respective Subsidiary is released from all of its obligations in accordance with the terms and provisions of this Agreement; *provided*, *that*, no Excluded Subsidiary shall be a Guarantor.

"**Hazardous Materials**" means all explosive or radioactive substances or wastes and all hazardous or toxic substances, wastes or other pollutants, including petroleum or petroleum distillates, asbestos or asbestos containing materials, polychlorinated biphenyls, radon gas, infectious or medical wastes and all other substances or wastes of any nature.

"**Health-Care-Insurance Receivable**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Health Care Laws**" means all federal, state or local laws, rules, codes, statutes, regulations, ordinances, statutes, as the same may be amended, modified or supplemented from time to time, and any successor statute thereto relating to the regulation, provision or administration of, or billing or payment for, health care products or services, including, without limitation, (a) fraud and abuse laws (including the following statutes, as amended, modified or supplemented from time to time and any successor statutes thereto and regulations promulgated from time to time thereunder: the federal Anti-Kickback Statute (42 U.S.C. § 1320a-7b(b)); the Stark Law (42 U.S.C. § 1395nn and §1395(q)); the civil False Claims Act (31 U.S.C. § 3729 et seq.); Sections 1320a-7, 1320a-7a and 1320a-7b of Title 42 of the United States Code; the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (Pub. L. No. 108-173)); (b) Medicare, Medicaid, CHAMPVA or TRICARE or other Governmental Party Payor Programs; (c) laws relating to the licensure or regulation of healthcare providers, suppliers, professionals, facilities or payors; (d) laws relating to quality, safety certification and accreditation standards and requirements;

(e) laws relating to the billing, coding or submission of claims or collection of accounts receivable or refund of overpayments under Third Party Payor Programs; (f) Health Information Privacy Laws; (g) laws relating to the practice of medicine and other health care professions or the organization of medical or professional entities; (h) laws relating to fee-splitting prohibitions; (i) charitable trusts or charitable solicitation laws; (j) health planning or rate-setting laws, including laws regarding certificates of need and certificates of exemption; (k) laws relating to certificates of operations and authority; (l) laws regulating the provision of free or discounted care or services; (m) CLIA; and (n) the Federal Food, Drug, and Cosmetic Act (21 U.S.C. § 301 et seq.).

"**Health Care Permits**" means any and all permits, licenses and authorizations issued to or required for any Credit Party or any Subsidiary by a Governmental Authority under applicable Health Care Laws.

"**Health Information Privacy Laws**" means the (a) Health Insurance Portability and Accountability Act of 1996; (b) the Health Information Technology for Economic and Clinical Health Act (Title XIII of the American Recovery and Reinvestment Act of 2009); (c) Genetic Information Non-Discrimination Act of 2008 (GINA); and (d) any state and local laws to which any Credit Party or any Subsidiary is subject regulating the privacy and/or security of genetic information or individually identifiable information, including state laws providing for notification of breach of privacy or security of individually identifiable information, in each case with respect to the laws described in clauses (a), (b), (c) and (d) of this definition, as the same may be amended, modified or supplemented from time to time, any successor statutes thereto, any and all rules or regulations promulgated from time to time thereunder.

"**Hedging Agreement**" means any interest rate protection agreement, foreign currency exchange agreement, commodity price protection agreement or other interest or currency exchange rate or commodity price hedging arrangement.

"**HMT**" has the meaning assigned to such term in the definition of "Sanctions".

"**Indebtedness**" means, for any Person, without duplication: (a) obligations created, issued or incurred by such Person for borrowed money (whether by loan, advance, the issuance and sale of debt securities or the sale of Property to another Person subject to an understanding or agreement, contingent or otherwise, to repurchase such Property from such Person); (b) obligations of such Person to pay the deferred purchase or acquisition price of Property or services, other than trade accounts payable (other than for borrowed money) arising, and accrued expenses and deferred taxes incurred and paid, in the ordinary course of business and, with respect to trade accounts payable, not past due for more than 60 days after the date on which such trade account payable was created; (c) Capital Lease Obligations of such Person; (d) obligations of such Person in respect of Hedging Agreements; and (e) obligations of such Person in respect of letters of credit or similar instruments issued or accepted by banks and other financial institutions for the account of such Person. The Indebtedness of any Person shall include the Indebtedness of any other entity (including any partnership in which such Person is a general partner) to the extent such Person is liable therefor as a result of such Person's ownership interest in or other relationship with such entity, except to the extent the terms of such Indebtedness provide that such Person is not liable therefor.

"**Indemnified Taxes**" means (a) all Taxes imposed on or with respect to any payment made by or on account of any obligation of any Credit Party under any Loan Document other than Excluded Taxes and (b) to the extent not otherwise described in the foregoing clause (a), Other Taxes.

"**Instrument**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Investors' Rights Agreement**" means that certain Third Amended and Restated Investors' Rights Agreement, dated as of the Closing Date, by and among the Borrower, the Investors (as defined therein) and the Founders (as defined therein).

"**Inventory**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Intellectual Property**" means all of the Credit Parties' right, title, and interest in and to the following:

(a) their respective Copyrights, Trademarks and Patents;

(b) any and all trade secrets and trade secret rights, including, without limitation, any rights to unpatented inventions, know-how, operating manuals;

(c) any and all source code;

(d) any and all design rights which may be available to any Credit Party;

(e) any and all claims for damages by way of past, present and future infringement of any of the foregoing, with the right, but not the obligation, to sue for and collect such damages for said use or infringement of the Intellectual Property rights identified above; and

(f) all amendments, renewals and extensions of any of such Copyrights, Trademarks or Patents.

"**Intercompany Indebtedness**" has the meaning assigned to such term in Section 10.9.

"**Investment**" means, for any Person: (a) any Acquisition; (b) any acquisition (whether for cash, Property, services or securities or otherwise) of capital stock or other equity interests, bonds, notes, debentures, partnership, limited liability company or other ownership interests or other securities of any other Person or any agreement to make any such acquisition (including, without limitation, any "**short sale**" or any sale of any securities at a time when such securities are not owned by the Person entering into such short sale); (c) the making of any deposit with, or advance, loan or other extension of credit to, any other Person (including the purchase of Property from another Person subject to an understanding or agreement, contingent or otherwise, to resell such Property to such Person, but excluding any such advance, loan or extension of credit representing the purchase price of Inventory or supplies sold by such Person in the ordinary course of business; *provided*, *that*, in no event shall the term of any such Inventory or supply advance, loan or extension of credit exceed 180 days); or (d) the entering into of any Guarantee of, or other contingent obligation with respect to, Indebtedness or other liability of any other Person and (without duplication) any amount committed to be advanced, lent or extended to such Person. Notwithstanding the foregoing, Capital Expenditures shall not be deemed "**Investments**" for purposes hereof.

"**Investment Documents**" means, collectively, the Loan Documents and the Warrants.

"**Investment Property**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Landlord's Waiver and Consent**" means, with respect to any Leasehold Property, a letter, certificate or other instrument in writing from the lessor under the related lease, or ground lease, in form reasonably satisfactory to the Lenders.

"**Leasehold Property**" means any leasehold interest of any Credit Party or any Subsidiary, in each case, as lessee under any lease of real property, other than any such leasehold interest designated from time to time by the Collateral Agent in its reasonable discretion as not being required to be included in the Collateral and not being of material importance to the business or operations of the Credit Parties and their respective Subsidiaries.

"**Lenders**" means each of the Persons identified as a "Lender" on the signature pages hereto, each other Person that becomes a Lender in accordance with this Agreement and their respective successors and assigns. The Lenders party hereto as of the Closing Date are set forth on Schedule A hereto.

"**Letter-of-Credit Right**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Licensed Personnel**" means any Person (including any physician) involved in the delivery of health care or medical items, services or supplies, employed or retained by any Credit Party or any Subsidiary.

"**Lien**" means, with respect to any asset, (a) any mortgage, deed of trust, lien, pledge, hypothecation, encumbrance, charge or security interest in, on or of such asset, (b) the interest of a vendor or a lessor under any conditional sale agreement, capital lease or title retention agreement (or any financing lease having substantially the same economic effect as any of the foregoing), other than an operating lease, relating to such asset and (c) in the case of securities, any purchase option, call or similar right of a third party with respect to such securities.

"**Loans**" means an extension of credit by a Lender to the Borrower under Section 2.1(a).

"**Loan Documents**" means this Agreement, the Term Note, the Control Agreements, the Perfection Certificate(s), any Pledge Amendment, the Direction Letter and any other instruments or documents executed and delivered or to be delivered to the Lenders from time to time pursuant to this Agreement (other than, for the avoidance of doubt, the Warrants), as the same may be supplemented and amended from time to time in accordance with their respective terms.

"**Lubbock Mortgage**" means a mortgage with respect to the Lubbock Property.

"**Lubbock Property**" means the real property located at tract EE-1, Physicians Surgicenter of Lubbock, an Addition of the City of Lubbock, Lubbock County, Texas, as recorded in Document No. 2007047498 of the Official Public Records of Lubbock County, Texas.

"**Material Adverse Effect**" means a material adverse change in, or a material adverse effect on, (a) the business, assets or financial condition of the Credit Parties and their respective Subsidiaries, taken as a whole, (b) the ability of any Credit Party to pay or perform any of its obligations under this Agreement or the other Loan Documents or (c) any of the rights of or benefits available to the Collateral Agent or the Lenders under this Agreement and the other Loan Documents.

"**Material Indebtedness**" means Indebtedness (other than the Loans), including, without limitation, obligations in respect of one or more Hedging Agreements, in an aggregate principal amount exceeding $2,000,000. For purposes of determining Material Indebtedness, the "**principal amount**" of

the obligations of any Person in respect of a Hedging Agreement at any time shall be the maximum aggregate amount (giving effect to any netting agreements) that such Person would be required to pay if such Hedging Agreement were terminated at such time.

"**Material Leasehold Property**" means a Leasehold Property reasonably determined by the Lenders in their reasonable discretion to be of material value or of material importance to the business operations of the Credit Parties and their respective Subsidiaries, including, without limitation, a Leasehold Property where any Credit Party or any Subsidiary operates a clinical laboratory or keeps the books and records of any Credit Party or any Subsidiary.

"**Material Rental Obligations**" means obligations of the Credit Parties and their respective Subsidiaries to pay rent under any one or more operating leases with respect to any real or personal property that is material to the business of the Credit Parties and their respective Subsidiaries.

"**Maturity Date**" means October 27, 2022; *provided*, *that*, if such day is not a Business Day, the Maturity Date shall be the next preceding Business Day.

"**Maximum Rate**" has the meaning assigned to such term in Section 10.15.

"**Medicaid**" means, collectively, the health care assistance program established by Title XIX of the Social Security Act (42 U.S.C. § 1396 et seq.) and any statutes succeeding thereto, and all laws, rules, regulations, manuals, orders or requirements pertaining to such program, including (a) all federal statutes affecting such program; (b) all state statutes and plans for medical assistance enacted in connection with such program and federal rules and regulations promulgated in connection with such program; and (c) all applicable provisions of all rules, regulations, manuals, orders and administrative, reimbursement, and requirements of all Governmental Authorities promulgated in connection with such program (whether or not having the force of law), in each case as the same may be amended, supplemented or otherwise modified from time to time.

"**Medicare**" means, collectively, the health insurance program for the aged and disabled established by Title XVIII of the Social Security Act (42 U.S.C. § 1395 et seq.) and any statutes succeeding thereto, and all laws, rules, regulations, manuals, orders or requirements pertaining to such program including (a) all federal statutes (whether set forth in Title XVIII of the Social Security Act (42 U.S.C. § 1395 et seq.) or elsewhere) affecting such program; and (b) all applicable provisions of all rules, regulations, manuals, orders and administrative, reimbursement and requirements of all Governmental Authorities promulgated in connection with such program (whether or not having the force of law), in each case as the same may be amended, supplemented or otherwise modified from time to time.

"**Multiemployer Plan**" means a multiemployer plan as defined in Section 4001(a)(3) of ERISA.

"**Net Cash Payments**" means,

(a) with respect to any Casualty Event, the aggregate amount of cash proceeds of insurance, condemnation awards and other compensation received by the Credit Parties and their respective Subsidiaries in respect of such Casualty Event net of (i) reasonable expenses incurred by the Credit Parties and their respective Subsidiaries in connection therewith, (ii) contractually required repayments of Indebtedness to the extent secured by a Lien on such property and (iii) any income and transfer taxes payable by the Credit Parties and their respective Subsidiaries in respect of such Casualty Event;

(b) with respect to any Disposition, the aggregate amount of all cash payments received by the Credit Parties and their respective Subsidiaries directly or indirectly in connection with such Disposition, whether at the time of such Disposition or after such Disposition under deferred payment arrangements or Investments entered into or received in connection with such Disposition, net of (i) the amount of any legal, title, transfer and recording tax expenses, commissions and other fees and expenses payable by the Credit Parties and their respective Subsidiaries in connection therewith, (ii) any Federal, state and local income or other Taxes estimated to be payable by the Credit Parties and their respective Subsidiaries as a result thereof, (iii) any repayments by the Credit Parties and their respective Subsidiaries of Indebtedness to the extent that such Indebtedness is secured by a Lien on the property that is the subject of such Disposition and the underlying transaction documents creating such Lien require, or the transferee thereof requires, that such Indebtedness be repaid as a condition to the purchase of such property and (iv) any repayments by the Credit Parties and their respective Subsidiaries to minority stockholders if and to the extent permitted hereby; and

(c) with respect to any incurrence of Indebtedness or offering of capital stock or other equity securities, the aggregate amount of all cash proceeds received by the Credit Parties and their respective Subsidiaries therefrom less all legal, underwriting and similar discounts, commissions, fees, costs and expenses associated or incurred in connection therewith.

"**Non-Consenting Lender**" means any Lender that does not approve any consent, waiver or amendment that (a) requires the approval of all or all affected Lenders in accordance with the terms of Section 10.2 and (b) has been approved by the Required Lenders.

"**Obligations**" means (a) the aggregate outstanding principal balance of and all interest on, and Prepayment Premium with respect to, the Loans made by the Lenders (including, for the avoidance of doubt, the Term Loan) to the Borrower (including any interest accruing after the commencement of any proceeding by or against the Borrower under the federal bankruptcy laws, as now or hereafter constituted, or any other applicable federal or state bankruptcy, insolvency or other similar law, and any other interest that would have accrued but for the commencement of such proceeding, whether or not any such interest is allowed as a claim enforceable against the Borrower in any such proceeding), and (b) all, fees, costs, charges, expenses and other obligations from time to time owing to the Lenders by the Credit Parties hereunder or under any other Loan Document.

"**OFAC**" means the Office of Foreign Assets Control of the United States Department of the Treasury.

"**Organization Documents**" means (a) for any corporation, the certificate or articles of incorporation, the bylaws, any certificate of designation or other instrument relating to the rights of preferred shareholders or stockholders of such corporation, (b) for any partnership, the partnership agreement and, if applicable, the certificate of limited partnership, and (c) for any limited liability company, the operating agreement and articles or certificate of formation or organization.

"**Other Connection Taxes**" means, with respect to any Lender, Taxes imposed as a result of a present or former connection between such Lender and the jurisdiction imposing such Tax (other than connections arising from such Lender having executed, delivered, become a party to, performed its obligations under, received payments under, received or perfected a security interest under, engaged in any other transaction pursuant to or enforced any Loan Document, or sold or assigned an interest in any Loan or Loan Document).

"**Other Taxes**" means any and all present or future stamp, court or documentary, intangible, recording, filing or similar Taxes arising from any payment made hereunder or from the execution,

delivery or enforcement or registration of, from the receipt or perfection of a security interest under, or otherwise with respect to, this Agreement and the other Loan Documents except any such Taxes that are Other Connection Taxes imposed with respect to an assignment (other than an assignment made pursuant to Section 2.8(b)).

"**Participant**" has the meaning assigned to such term in Section 10.4(c).

"**Participant Register**" has the meaning assigned to such term in Section 10.4(c).

"**Patents**" means all patents issued or assigned to and all patent applications made by the Credit Parties and their respective Subsidiaries and all exclusive and nonexclusive licenses to the Credit Parties and their respective Subsidiaries from third parties or rights to use patents owned by such third parties, including, without limitation, the patents, patent applications and licenses listed on Schedule 5.5 hereto, along with any and all (a) inventions and improvements described and claimed therein, (b) reissues, divisions, continuations, extensions and continuations-in-part thereof, (c) income, royalties, damages, claims and payments now and hereafter due and/or payable under and with respect thereto, including, without limitation, damages and payments for past or future infringements thereof, (d) rights to sue for past, present and future infringements thereof, and (e) any other rights corresponding thereto throughout the world.

"**Pension Plan**" means any Plan that is a defined benefit pension plan subject to the provisions of Title IV of ERISA or Section 412 of the Code or Section 302 of ERISA, and in respect of which any Credit Party or any ERISA Affiliate is (or, if such plan were terminated, would under Section 4069 of ERISA be deemed to be) an "**employer**" as defined in Section 3(5) of ERISA.

"**Perfection Certificate**" means, individually and collectively, certificates, in substantially the form attached as Exhibit C hereto.

"**Permitted Acquisitions**" means Investments consisting of an Acquisition by any Credit Party; *provided*, *that*: (a) the Property acquired (or the Property of the Person acquired) in such Acquisition is used or useful in the businesses of the Credit Parties and their respective Subsidiaries, (b) the Lenders shall have received not less than five (5) Business Days prior notice of such Acquisition, which notice shall contain copies or drafts of the Acquisition transaction documents, (c) at or prior to the closing of such Permitted Acquisition, the Collateral Agent for the benefit of the Lenders shall be granted a first priority perfected Lien (subject to Permitted Liens) in the assets and capital stock or other equity interests of such acquisition target or Subsidiary and such acquisition target or Subsidiary shall join this Agreement and the other Loan Documents as a Credit Party pursuant to the terms of Section 7.10, (d) in the case of an Acquisition of the capital stock or other equity interests of another Person, the board of directors (or other comparable governing body) of such other Person shall have duly approved such Acquisition, (e) the Credit Parties shall have delivered to the Lenders a Compliance Certificate demonstrating that no Event of Default exists or would be caused by such Acquisition, (f) after giving effect thereto, the representations and warranties made by the Credit Parties in each Loan Document taken as a whole shall be true and correct in all material respects (except to the extent that such representation and warranty is qualified by materiality or reference to Material Adverse Effect, in which case such representation and warranty shall be true and correct in all respects) at and as if made as of the date of such Acquisition, except to the extent such representations and warranties expressly relate to an earlier date in which case such representations and warranties shall be true and correct in all material respects as of such earlier date (except to the extent that such representation and warranty is qualified by materiality or reference to Material Adverse Effect, in which case such representation and warranty shall be true and correct in all respects as of such earlier date)), (g) the Total Consideration paid by the Credit Parties for all such Acquisitions (x) occurring in any fiscal year shall not exceed $10,000,000 and (y) in the

aggregate prior to the Maturity Date shall not exceed $30,000,000 (*provided*, *that*, the Avero Earn-Out Payments and the Carmenta Earn-Out Payments shall be excluded from the calculations of each of the baskets set forth in clauses (x) and (y) above), and (h) the business and assets acquired by a Credit Party, or in the case of an equity interest, formed, in such Acquisition shall be free and clear of all Liens (other than Permitted Liens).

"**Permitted Dispositions**" has the meaning assigned to such term in Section 8.4(b).

"**Permitted Post-IPO Dividends**" means Restricted Junior Payments payable from time to time after a Qualified IPO on account of the capital stock of the Borrower, in an aggregate amount not to exceed six percent (6.00%) per annum of the net cash proceeds received by the Borrower from such Qualified IPO.

"**Permitted Pre-IPO Dividends**" means Restricted Junior Payments payable from time to time prior to a Qualified IPO on account of the capital stock of the Borrower; *provided*, *that*, (a) at least a pro rata portion of such dividends and distributions are paid to the holders of the then-outstanding shares of Series A-1 Preferred Stock and the Series B Preferred Stock in their respective capacities as such, on an as converted basis, and (b) the aggregate amount of such dividends and distributions during any fiscal year (or, with respect to the fiscal year in which the Qualified IPO occurs, for the period from the beginning of such fiscal year to the date immediately preceding the date of such Qualified IPO) shall not exceed an amount equal to two thirds of the Borrower's net income for such fiscal year (or, with respect to the fiscal year in which the Qualified IPO occurs, for the period from the beginning of such fiscal year to the date immediately preceding the date of such Qualified IPO) without the prior written consent of the Lenders.

"**Permitted Investments**" means:

(a) direct obligations of, or obligations the principal of and interest on which are unconditionally guaranteed by, the United States of America (or by any agency thereof to the extent such obligations are backed by the full faith and credit of the United States of America), in each case maturing within one year from the date of acquisition thereof;

(b) investments in commercial paper maturing within 90 days from the date of acquisition thereof and having, at such date of acquisition, the highest credit rating obtainable from S&P or from Moody's Investors Service, Inc.;

(c) investments in certificates of deposit, banker's acceptances and time deposits maturing within 180 days from the date of acquisition thereof issued or guaranteed by or placed with, and money market Deposit Accounts issued or offered by, any domestic office of any commercial bank organized under the laws of the United States of America or any State thereof which has a combined capital and surplus and undivided profits of not less than $250,000,000;

(d) fully collateralized repurchase agreements with a term of not more than 30 days for securities described in clause (a) above and entered into with a financial institution satisfying the criteria described in clause (c) above;

(e) investments in money market mutual funds that are rated AAA by S&P; and

(f) instruments equivalent to those referred to in clauses (a) through (e) above denominated in any foreign currency and comparable in credit quality and tenor to those referred to above and commonly used by corporations for cash management purposes in any jurisdiction outside the United

States to the extent reasonably required in connection with any business conducted by any Subsidiary organized in such jurisdiction.

"**Permitted Liens**" has the meaning assigned to such term in Section 8.2.

"**Person**" means any natural person, corporation, limited liability company, trust, joint venture, association, company, partnership, Governmental Authority, or other entity.

"**Plan**" means any employee benefit plan within the meaning of Section 3(3) of ERISA in which any Credit Party, any Subsidiary or any ERISA Affiliate is an "**employer**" as defined in Section 3(5) of ERISA, including, but not limited to, any Pension Plan or Multiemployer Plan.

"**Pledge Amendment**" has the meaning assigned to such term in Section 4.5(a).

"**Pledged Collateral**" means, collectively, with respect to each Credit Party, (a) the capital stock or other equity interests set forth on Schedule 4.3 hereto and all options, warrants, rights, agreements and additional capital stock or other equity interests of whatever class of any Subsidiary or other Person now existing or hereafter acquired by such Credit Party (including by issuance), together with all rights, privileges, authority and powers of such Credit Party relating to such capital stock or other equity interests in each such Subsidiary or other Person or under any Organization Document of each such Subsidiary or other Person, and the certificates, instruments and agreements representing such capital stock or other equity interests and any and all interest of such Credit Party in the entries on the books of any financial intermediary pertaining to such capital stock or other equity interests, (b) all capital stock or other equity interests of any issuer, which capital stock or other equity interests are hereafter acquired by such Credit Party (including by issuance) and all options, warrants, rights, agreements and additional equity interests of whatever class of any such issuer acquired by such Credit Party (including by issuance), together with all rights, privileges, authority and powers of such Credit Party relating to such capital stock or other equity interests or under any Organization Document of any such issuer, and the certificates, instruments and agreements representing such capital stock or other equity interests and any and all interest of such Credit Party in the entries on the books of any financial intermediary pertaining to such capital stock or other equity interests, from time to time acquired by such Credit Party in any manner, and (c) all capital stock or other equity interests issued in respect of the capital stock or other equity interests referred to in clause (a) or (b) upon any consolidation or merger of any issuer of such capital stock or other equity interests; *provided*, *that*, "Pledged Collateral" shall not include any Excluded Collateral.

"**Post-Default Rate**" means, a rate per annum equal to the Applicable Rate plus two percent (2%).

"**Prepayment Premium**" has the meaning assigned to such term in Section 2.5(b).

"**Pro Rata**" means in respect of the Term Loan, with respect to any Lender at any time, the percentage (carried out to the ninth decimal place) of the Term Loan represented by the outstanding principal amount of such Lender's portion of the Term Loan at such time.

"**Proceeds**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Promissory Note**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Property**" means any interest of any kind in property or assets, whether real, personal or mixed, and whether tangible or intangible.

"**Proprietary Rights**" has the meaning assigned to such term in Section 5.5(b).

"**Qualified IPO**" means the issuance by the Borrower of its capital stock in an underwritten primary public offering (other than a public offering pursuant to a registration statement on Form S-8) pursuant to an effective registration statement filed with the Securities and Exchange Commission in accordance with the Securities Act, and any successor statute (whether alone or in connection with a secondary public offering).

"**Real Property Asset**" means, at any time of determination, any and all real property owned or leased by the Credit Parties and their respective Subsidiaries.

"**Register**" has the meaning assigned to such term in Section 10.4(g).

"**Recipient**" means any Lender or the Collateral Agent.

"**Registered Proprietary Rights**" has the meaning assigned to such term in Section 5.5(c).

"**Related Parties**" means, with respect to any specified Person, such Person's Affiliates and the respective partners, directors, officers, employees, agents, administrators, managers, representatives, advisors and sub-advisors of such Person and such Person's Affiliates.

"**Required Lenders**" means, at any time, Lenders having Total Credit Exposures representing more than 50% of the Total Credit Exposures of all Lenders.

"**Restricted Junior Payment**" means (a) any dividend or other distribution, direct or indirect, on account of any shares of any class of stock of, or other equity interest in, any Credit Party or any Subsidiary now or hereafter outstanding, except a dividend payable solely in shares of stock or other equity interests, (b) any redemption, retirement, sinking fund or similar payment, purchase or other acquisition for value, direct or indirect, of any shares of any class of stock of, or other equity interest in, any Credit Party or any Subsidiary now or hereafter outstanding, (c) any payment made to retire, or to obtain the surrender of, any outstanding warrants, options or other rights to acquire shares of any class of stock of, or other equity interest in, any Credit Party or any Subsidiary, (d) any payment or prepayment of principal of, premium, if any, or interest on, or redemption purchase, retirement, defeasance (including economic or legal defeasance), sinking fund or similar payment with respect to, any subordinated indebtedness, and (e) any payment made to any Affiliate of any Credit Party or any Subsidiary in respect of management, consulting or other similar services provided to any Credit Party or any Subsidiary.

"**Restrictive Agreements**" has the meaning assigned to such term in Section 5.13(b).

"**Sanctions**" means any sanction administered or enforced by the United States Government (including OFAC), the United Nations Security Council, the European Union, Her Majesty's Treasury ("HMT") or other relevant sanctions authority.

"**Securities Act**" means the Securities Act of 1933, including all amendments thereto and regulations promulgated thereunder.

"**Securities Account**" has the meaning assigned to such term in Article 8 of the UCC as in effect in the State of New York.

"**Security**" has the meaning assigned to such term in Article 8 of the UCC as in effect in the State of New York.

"**Series A-1 Preferred Stock**" means the series of preferred stock of the Borrower designated as Series A-1 Preferred Stock, par value $0.001.

"**Series A-2 Preferred Stock**" means the series of preferred stock of the Borrower designated as Series A-2 Preferred Stock, par value $0.001.

"**Series B Preferred Stock**" means the series of preferred stock of the Borrower designated as Series B Preferred Stock, par value $0.001.

"**Series B Preferred Stock Purchase Agreement**" means that certain Series B Preferred Stock Purchase Agreement, dated as of the Closing Date, by and among the Borrower and AOF III Co-Invest.

"**S&P**" means Standard & Poor's Ratings Services LLC, a subsidiary of McGraw Hill Financial, Inc.

"**Specified Acceleration Event**" means (a) an event of the type described in clause (g), (h) or (i) of Section 9.1, (b) an event of the type described in clause (l) of Section 9.1, (c) an event of the type described in clause (a)(i) of Section 9.1, (d) an event of the type described in clause (a)(ii) of Section 9.1, to the extent that the Athyrium Director has not voted in favor of such non-payment at a meeting of the board of directors of the Borrower and (e) an event of the type described in clause (c)(i) of Section 9.1 relating to the Borrower's declaration or making of a Restricted Junior Payment in violation of Section 8.6, to the extent that the Athyrium Director has not voted in favor of such action at a meeting of the board of directors of the Borrower.

"**Stylli**" means Harry Stylli, an individual.

"**Subsidiary**" means any corporation, limited liability company, partnership, association or other entity (a) of which securities or other ownership interests representing more than 50% of the ordinary voting power or, in the case of a partnership, more than 50% of the general partnership interests are, as of such date, owned, controlled or held, or (b) that is, as of such date, otherwise Controlled, by the parent and/or one or more Subsidiaries of the parent. References herein to "**Subsidiaries**" shall, unless the context requires otherwise, be deemed to be references to Subsidiaries of the Borrower.

"**Supporting Obligation**" has the meaning assigned to such term in Article 9 of the UCC as in effect in the State of New York.

"**Taxes**" means any and all present or future taxes, levies, imposts, duties, deductions, charges or withholdings, assessments, fees or other charges imposed by any Governmental Authority, including any interest, additions to tax or penalties applicable thereto.

"**Term Loan**" means the $75,000,000 in aggregate principal amount of Loans funded on the Closing Date by the Lenders pursuant to Section 2.1(a). The amount of the portions of the Term Loan to be funded on the Closing Date by each Lender is set forth on Schedule A.

"**Term Note**" means any promissory note, substantially in the form of Exhibit A-1 annexed hereto, issued by the Borrower in favor of a Lender and evidencing the Borrower's obligations in respect of the portion of the Term Loan made by such Lender.

"**Third Party**" means any Person, other than the parties hereto and their respective Affiliates.

"**Third Party Payor**" means any Third Party which presently or in the future sponsors or maintains any Third Party Payor Program, including without limitation, any Governmental Payors, private insurers, and managed care plans.

"**Third Party Payor Authorizations**" means all participation agreements, provider or supplier agreements, enrollments, accreditations and billing numbers necessary to participate in and receive reimbursement from a Third Party Payor Program, including all Government Payor participation agreements.

"**Third Party Payor Programs**" means all payment or reimbursement programs maintained by a Third Party that pay or insure health or medical expenses on behalf of beneficiaries or recipients, in which any Credit Party or any Subsidiary participates.

"**Total Credit Exposure**" means, as to any Lender at any time, the outstanding portion of the Term Loan held by such Lender at such time.

"**Total Consideration**" means, with respect to any Acquisition, the sum of (a) all cash and non-cash consideration, including the amount of Indebtedness assumed by the buyer and the amount of Indebtedness issued by the buyer to the seller, (b) the maximum amount payable in connection with any deferred purchase price obligation (including any earn-out obligation) and (c) the value of any capital stock or other equity interests of any Credit Party or any Subsidiary issued to the seller in connection with such Acquisition.

"**Total Voting Power**" means, with respect to any Person, the total number of votes which holders of securities having the ordinary power to vote, in the absence of contingencies, are entitled to cast in the election of directors of such Person.

"**Trademarks**" means all trademarks (including service marks), federal and state trademark registrations and applications made by the Credit Parties and their respective Subsidiaries, common law trademarks and trade names owned by or assigned to the Credit Parties and their respective Subsidiaries, all registrations and applications for the foregoing and all exclusive and nonexclusive licenses from third parties of the right to use trademarks of such third parties, including, without limitation, the registrations, applications, unregistered trademarks, service marks and licenses listed on Schedule 5.5 hereto, along with any and all (a) renewals thereof, (b) income, royalties, damages and payments now and hereafter due and/or payable with respect thereto, including, without limitation, damages, claims and payments for past or future infringements thereof, (c) rights to sue for past, present and future infringements thereof, and (d) foreign trademarks, trademark registrations, and trade name applications for any thereof and any other rights corresponding thereto throughout the world.

"**Treasury Regulations**" means the regulations, including temporary regulations, promulgated by the United States Treasury Department under the Code, as such regulations may be amended from time to time (including the corresponding provisions of any future regulations).

"**TRICARE**" means, collectively, a program of medical benefits covering former and active members of the uniformed services and certain of their dependents, financed and administered by the United States Departments of Defense, Health and Human Services and Transportation, and all laws applicable to such programs.

"**U.S. Person**" means any Person that is a "United States person" as defined in Section 7701(a)(30) of the Code.

"**UCC**" means the Uniform Commercial Code (or any similar or equivalent legislation) as in effect in any applicable jurisdiction.

"**USA Patriot Act of 2001**" has the meaning assigned to such term in Section 5.20.

"**Voting Agreement**" means that certain Third Amended and Restated Voting Agreement, dated as of the Closing Date, by and among the Borrower, the Investors (as defined therein) and the Key Holders (as defined therein).

"**Warrants**" means those certain Series B Preferred Stock warrants of the Borrower purchased by the Lenders, substantially in the form of Exhibit A-2. The Warrants shall have the rights set forth therein and shall be in the respective amounts set forth on Schedule A.

"**Wholly Owned Domestic Subsidiary**" means a Wholly Owned Subsidiary that is a Domestic Subsidiary. References herein to "**Wholly Owned Domestic Subsidiaries**" shall, unless the context requires otherwise, be deemed to be references to Wholly Owned Domestic Subsidiaries of the Borrower.

"**Wholly Owned Subsidiary**" means, with respect to any Person at any date, any corporation, limited liability company, partnership, association or other entity of which securities or other ownership interests representing 100% of the equity or ordinary voting power (other than directors' qualifying shares) or, in the case of a partnership, 100% of the general partnership interests are, as of such date, directly or indirectly owned, controlled or held by such Person or one or more Wholly Owned Subsidiaries of such Person or by such Person and one or more Wholly Owned Subsidiaries of such Person. References herein to "**Wholly Owned Subsidiaries**" shall, unless the context requires otherwise, be deemed to be references to Wholly Owned Subsidiaries of the Borrower.

"**Withdrawal Liability**" means liability to a Multiemployer Plan as a result of a complete or partial withdrawal from such Multiemployer Plan, as such terms are defined in Part I of Subtitle E of Title IV of ERISA.

1.2 Terms Generally. The definitions of terms herein shall apply equally to the singular and plural forms of the terms defined. Whenever the context may require, any pronoun shall include the corresponding masculine, feminine and neuter forms. The words "include", "includes" and "including" shall be deemed to be followed by the phrase "without limitation". The word "will" shall be construed to have the same meaning and effect as the word "shall". Unless the context requires otherwise (a) any definition of or reference to any agreement, instrument or other document herein shall be construed as referring to such agreement, instrument or other document as from time to time amended, supplemented or otherwise modified (subject to any restrictions on such amendments, supplements or modifications set forth herein), (b) any reference herein to any Person shall be construed to include such Person's successors and assigns, (c) the words "herein", "hereof" and "hereunder", and words of similar import, shall be construed to refer to this Agreement in its entirety and not to any particular provision hereof, (d) all references herein to Articles, Sections, Exhibits and Schedules shall be construed to refer to Articles and Sections of, and Exhibits and Schedules to, this Agreement and (e) the words "asset" and "property" shall be construed to have the same meaning and effect and to refer to any and all tangible and intangible assets and properties, including cash, securities, accounts and contract rights.

1.3 Accounting Terms; GAAP. Except as otherwise expressly provided herein, all terms of an accounting or financial nature shall be construed in accordance with GAAP, as in effect from time to

time; *provided*, *that*, if the Borrower notifies the Lenders that the Borrower requests an amendment to any provision hereof to eliminate the effect of any change occurring after the Closing Date in GAAP or in the application thereof on the operation of such provision (or if the Lenders notify the Borrower that the Lenders request an amendment to any provision hereof for such purpose), regardless of whether any such notice is given before or after such change in GAAP or in the application thereof, then such provision shall be interpreted on the basis of GAAP as in effect and applied immediately before such change shall have become effective until such notice shall have been withdrawn or such provision shall have been amended in accordance herewith.

1.4 Joint and Several Obligations; Designated Financial Officers.

(a) All Obligations of the Credit Parties hereunder shall be joint and several. Any notice, request, waiver, consent or other action made, given or taken by any Credit Party shall bind all Credit Parties.

(b) Each Credit Party hereby authorizes each of the Designated Financial Officers to act as agent for each Credit Party and to execute and deliver on behalf of each Credit Party such notices, requests, waivers, consents, certificates and other documents, and to take any and all actions, required or permitted to be delivered or taken by any Credit Party hereunder. The Borrower may replace any of the Designated Financial Officers or add any additional Designated Financial Officers by delivering written notice to the Lenders specifying the names of each new Designated Financial Officer and the offices held by each such Person. Each Credit Party hereby agrees that any such notices, requests, waivers, consents, certificates and other documents executed, delivered or sent by any Designated Financial Officer and any such actions taken by any Designated Financial Officer shall bind each Credit Party.

ARTICLE 2
THE CREDITS

2.1 The Term Loan and the Warrants.

(a) Term Loan. On the Closing Date, subject to the terms and conditions set forth herein, the Lenders agree to fund, on a *pro rata* basis, the full amount of the Term Loan. Principal amounts of the Term Loan that have been repaid or prepaid may not be reborrowed.

(b) [Reserved].

(c) Interest on the Term Loan. The outstanding principal amount of the Term Loan shall bear interest at a rate per annum equal to the Applicable Rate. Notwithstanding the foregoing, (i) any portion of the Term Loan which is not paid when due shall automatically bear interest until paid in full at the Post-Default Rate, (ii) during the period when any Event of Default of the type described in clauses (g), (h) or (i) of Section 9.1 shall have occurred and be continuing, the outstanding principal balance of the Term Loan shall automatically bear interest, after as well as before judgment, at the Post-Default Rate, and (iii) if there shall occur and be continuing any Event of Default (other than an Event of Default of the type described in clauses (g), (h) or (i) of Section 9.1), following written notice delivered to the Borrower from the Lenders, the outstanding principal balance of the Term Loan shall bear interest, after as well as before judgment, at the Post-Default Rate during the period beginning on the date such Event of Default first occurred, and ending on the date such Event of Default is cured or waived. Accrued and unpaid interest on the outstanding principal balance of the Term Loan shall be payable quarterly in arrears on March thirty-first (31st), June thirtieth (30th), September thirtieth (30th) and December thirty-first (31st) of each year; *provided*, *that*, interest accrued at the Post-Default Rate shall be payable on demand, and all accrued and unpaid interest on any portion of the principal of the Term Loan

shall be payable on each date that such portion of the principal of the Term Loan shall be payable hereunder and on the Maturity Date. All interest hereunder shall be computed on the basis of a year of 360 days, and in each case shall be payable for the actual number of days elapsed (including the first day but excluding the last day).

(d) Repayment of Term Loan. To the extent not previously paid, the Term Loan shall be due and payable in full on the Maturity Date.

(e) Loan Account. The Lenders shall maintain in accordance with their usual practice an account evidencing the indebtedness of the Borrower to the Lenders in respect of the Term Loan, including the amounts of principal and interest payable and paid to the Lenders from time to time hereunder. The entries made in the account maintained pursuant to this Section 2.1(e) shall be prima facie evidence of the existence and amounts of the obligations recorded therein; *provided*, *that*, the failure of the Lenders to maintain such account or any error therein shall not in any manner affect the obligation of the Borrower to repay the Term Loan in accordance with the terms of this Agreement.

(f) Term Note. Prior to the Closing Date, the Borrower shall prepare, execute and deliver to each Lender a Term Note evidencing the Borrower's obligations in respect of the portion of the Term Loan to be made by such Lender.

(g) Warrants. The Borrower and the Lenders hereby acknowledge and agree that, for United States income tax purposes, for an aggregate purchase price of $74,250,000, (i) the Lenders shall make the Term Loan to the Borrower and (ii) the Borrower shall sell to, and the Lenders shall purchase from the Borrower, the Warrants, in each case, in the respective amounts and purchase prices set forth opposite each Lender's name on Schedule A. Furthermore, the Borrower and the Lenders hereby acknowledge and agree that (i) the issue price (within the meaning of Section 1273(b) of the Code) of the Term Loan is determined pursuant to Section 1272-1275 of the Code and the Treasury Regulations thereunder and (ii) for United States federal income tax purposes, the issue price of the Warrants within the meaning of Section 1273(b) of the Code, which issue price was determined pursuant to Section 1.1273-2(h)(1) of the Treasury Regulations, is equal to $2,255,083.05. The parties hereto agree to report all income tax matters with respect to the Warrants consistent with the provisions of this Section 2.1(g) unless otherwise required by applicable law.

2.2 Payments.

(a) Generally. The Borrower shall be obligated to make each payment required to be made by the Borrower hereunder (whether of principal, interest, fees or otherwise) to the Lenders at their offices in New York, New York, prior to 3:00 p.m., New York, New York time, on the date when due (except that (i) if any payment of accrued and unpaid interest payable pursuant to Section 2.1(c) (other than the payment of accrued and unpaid interest payable on the Maturity Date) shall be due on a day that is not a Business Day, the date for payment shall be the last Business Day immediately preceding the date on which such payment would otherwise be due, and such payment shall include accrued and unpaid interest through the date on which such payment would otherwise be due, and (ii) if any other payment shall be due on a day that is not a Business Day, the date for payment shall be extended to the next succeeding Business Day, and, in the case of any such payment accruing interest, interest thereon shall be payable for the period of such extension). All payments shall be made in immediately available funds, in Dollars without set-off or counterclaim (unless otherwise required under Section 2.6), Pro Rata to the Lenders. Any amounts received after 3:00 p.m., New York, New York time on any date may, in the discretion of the Lenders, be deemed to have been received on the next succeeding Business Day for purposes of calculating interest thereon.

(b) Application of Payments. If at any time insufficient funds are received by and available to the Lenders to pay fully all amounts of principal, interest, Prepayment Premium and fees then due hereunder under any circumstances, including, without limitation, during, or as a result of, the exercise by the Lenders of remedies hereunder or under any other Loan Document and applicable law, such funds shall be applied, on a Pro Rata basis, (i) first, to pay interest, Prepayment Premium, fees, costs and expenses then due hereunder, (ii) second, to pay principal then due hereunder, and (iii) third, to any other Obligations then due from the Credit Parties to the Lenders or any other Affiliate of the Lenders.

2.3 [Reserved].

2.4 Prepayment of Term Loan.

(a) Optional Prepayments of Term Loan. The Borrower shall have the right at any time and from time to time to prepay the Term Loan in whole or in part, subject to prior notice in accordance with Section 2.4(d) and payment of any amounts due under Section 2.5(b). Each optional prepayment of the Term Loan shall be in an amount that is at least equal to $500,000 or any greater multiple of $250,000.

(b) Mandatory Prepayments. Subject to prior notice in accordance with Section 2.4(d) and subject to the payment of any amounts due under Section 2.5(b), the Borrower shall be obligated to, and shall, make prepayments of the Term Loan hereunder as follows:

(i) Sale of Assets. Without limiting the obligation of the Borrower to obtain the consent of the Lenders to any Disposition not otherwise permitted hereunder, the Borrower agrees, within two (2) Business Days after any Disposition by any Credit Party or any Subsidiary (other than a Permitted Disposition consummated in reliance on any of clauses (i) through (viii) of Section 8.4(b)), to prepay the Term Loan hereunder, in an aggregate amount equal to 100% of the amount of the Net Cash Payments from such Disposition received by such Credit Party or such Subsidiary, such payment to be effected in each case in the manner specified in Section 2.4(c) below. Notwithstanding the forgoing, the Borrower shall not be required to make any prepayment of the Term Loan under this Section 2.4(b)(i) with Net Cash Payments received by the Credit Parties and their respective Subsidiaries from Dispositions to the extent such Credit Party or such Subsidiary reinvests such Net Cash Payments in Eligible Assets within three hundred sixty-five (365) days of the date of such Disposition; *provided*, *that*, if such Net Cash Payments shall have not been so reinvested, such Net Cash Payments shall be immediately applied to prepay the Term Loan.

(ii) Proceeds of Casualty Events. Within two (2) Business Days after the date of receipt by the Lenders or the Credit Parties or any of their respective Subsidiaries of the proceeds of insurance, condemnation award or other compensation in respect of any Casualty Event affecting any property of the Credit Parties or any of their respective Subsidiaries, the Borrower shall prepay the Term Loan, in an aggregate amount equal to 100% of the Net Cash Payments from such Casualty Event, such payment to be effected in each case in the manner specified in Section 2.4(c) below; *provided*, *that*, the Borrower shall not be required to make any prepayment pursuant to this Section 2.4(b)(ii) in respect of the proceeds of business interruption insurance. Notwithstanding the forgoing, the Borrower shall not be required to make any prepayment of the Term Loan under this Section 2.4(b)(ii) with respect to up to $4,000,000 of aggregate Net Cash Payments received by the Credit Parties and their respective Subsidiaries from Casualty Events in any fiscal year to the extent such Credit Party or such Subsidiary reinvests such Net Cash Payments in Eligible Assets within three hundred sixty-five (365) days of

the date of such Disposition; *provided*, *that*, if such Net Cash Payments shall have not been so reinvested, such Net Cash Payments shall be immediately applied to prepay the Term Loan.

(iii) Issuance of Indebtedness. In the event that any Credit Party or any Subsidiary receives Net Cash Payments from the issuance or incurrence of Indebtedness by a Credit Party or a Subsidiary that is not permitted under Section 8.1, the Borrower shall, substantially simultaneously with (and in any event not later than the next succeeding Business Day) the receipt of such Net Cash Payments by the applicable Credit Party or Subsidiary, prepay the Term Loan hereunder, in an aggregate amount equal to 100% of the amount of the Net Cash Payments from such issuance or incurrence of Indebtedness received by the applicable Credit Party or Subsidiary, such payment to be effected in each case in the manner specified in Section 2.4(c) below.

(iv) Change of Control. Upon the occurrence of a Change of Control, the Borrower shall, at the direction of the Required Lenders, prepay the aggregate outstanding amount of the Term Loan, such payment to be effected in the manner specified in Section 2.4(c) below.

Notwithstanding anything herein to the contrary, if the Borrower, in consultation with the Collateral Agent, reasonably determines in good faith that the repatriation to the Borrower of the Net Cash Payments of the relevant Disposition consummated by any Foreign Subsidiary or the proceeds of insurance, condemnation award or other compensation in respect of any Casualty Event received by any Foreign Subsidiary, as the case may be, that would otherwise be required to be paid pursuant to Sections 2.4(b)(i) or (ii) above would result in materially adverse tax consequences to any of the Credit Parties, the amount that the Borrower shall be required to mandatorily prepay pursuant to Sections 2.4(b)(i) or (ii) above, as applicable, shall be reduced by such amount; it being understood that if the Borrower, in consultation with the Collateral Agent, reasonably determines that the repatriation of the Net Cash Payments or the proceeds of insurance, condemnation award or other compensation, as the case may be, would no longer result in materially adverse tax consequences to any of the Credit Parties, the relevant Foreign Subsidiary will to the extent then available promptly repatriate the relevant Net Cash Payments or the proceeds of insurance, condemnation award or other compensation, as the case may be, apply the same after such repatriation (net of additional Taxes payable or reserved against as a result thereof) to the repayment of the Term Loan pursuant to this Section 2.4(b) to the extent required herein (without regard to this paragraph).

(c) Application. In the event of any prepayment of the Term Loan pursuant to this Section 2.4 or otherwise, such prepayment shall be applied to the portions of the Term Loan held by the Lenders Pro Rata.

(d) Notification of Certain Prepayments. The Borrower shall notify the Lenders by telephone (confirmed by telecopy) of any voluntary prepayment of the Term Loan not later than three (3) Business Days before the date of such prepayment. The Borrower shall notify the Lenders of any mandatory prepayment of the Term Loan pursuant to Section 2.4(b) hereunder as soon as practicable. Each such notice shall be irrevocable and shall specify the prepayment date and the principal amount of the Term Loan or portion thereof to be prepaid; *provided*, *that*, any notice of voluntary prepayment given by the Borrower may state that such notice is conditioned upon the effectiveness of other credit facilities or capital raising or the occurrence of a Change of Control, in which case such notice may be revoked by the Borrower (by notice to the Collateral Agent on or prior to the specified effective date) if such condition is not satisfied.

(e) Prepayments Accompanied by Interest and Prepayment Premium. All prepayments of the Term Loan shall be accompanied by accrued and unpaid interest through the date of

prepayment on the portion of the Term Loan being prepaid. All prepayments of the Term Loan made pursuant to the express terms of this Section 2.4 or Section 9.1 (solely to the extent set forth in the last paragraph of such Section) shall be accompanied by Prepayment Premium (if any) on the portion of the Term Loan being prepaid.

2.5 Fees.

(a) Original Issue Discount. The Borrower agrees that the Term Loan shall be issued on the Closing Date with original issue discount in an amount equal to 1.00% of the aggregate original principal amount of the Term Loan (i.e., $750,000).

(b) Prepayment Premium. The Term Loan may be prepaid in whole or in part so long as the Prepayment Premium (to the extent set forth in Section 2.4(e)), if any, is paid concurrently therewith on a Pro Rata basis to each Lender. In the event all or a portion of the Term Loan is prepaid, or required to be prepaid, in each case, pursuant to Section 2.4 or Section 9.1 (solely to the extent set forth in the last paragraph of such Section), such prepayments or required prepayments, as the case may be, shall require the Borrower to pay, on a Pro Rata basis to each Lender, a premium (the "Prepayment Premium") equal to (i) the prepayment amount or required prepayment amount, as the case may be, multiplied by (ii) the applicable Prepayment Percentage set forth below:

Period during which Prepayment or Requirement for Prepayment Occurs	Applicable Prepayment Percentage
On or prior to the second anniversary of the Closing Date	15%
After the second anniversary of the Closing Date but on or prior to the third anniversary of the Closing Date	8%
After the third anniversary of the Closing Date but on or prior to the fourth anniversary of the Closing Date	4%
After the fourth anniversary of the Closing Date	0%

2.6 Taxes.

(a) Any and all payments by or on account of any Obligations hereunder shall be made free and clear of and without deduction for any Taxes, except as required by applicable law; *provided, that*, if the Borrower shall be required by any applicable law to deduct any Indemnified Taxes from such payments, then (i) the sum payable shall be increased as necessary so that after making all required deductions (including deductions applicable to additional sums payable by the Borrower under this Section 2.6) the Lenders receive an amount equal to the sum they would have received had no such deductions been made, (ii) the Borrower shall make such deductions and (iii) the Borrower shall pay the full amount deducted to the relevant Governmental Authority in accordance with applicable law.

(b) In addition, the Borrower shall pay all Other Taxes to the relevant Governmental Authority in accordance with applicable law.

(c) The Borrower shall indemnify each Recipient, within ten (10) days after written demand therefor, for the full amount of any Indemnified Taxes (including Indemnified Taxes imposed or asserted on or attributable to amounts payable under this Section 2.6) payable or paid by, or required to be withheld or deducted from a payment to, such Recipient (and any reasonable expenses arising therefrom

or with respect thereto), whether or not such Indemnified Taxes were correctly or legally imposed or asserted by the relevant Governmental Authority. A certificate as to the amount of such payment or liability delivered to the Borrower by the Lenders shall be conclusive absent manifest error.

(d) (i) Any Lender that is entitled to an exemption from or reduction of withholding Tax with respect to payments made under any Loan Document shall deliver to the Borrower, at the time or times reasonably requested by the Borrower, such properly completed and executed documentation reasonably requested by the Borrower as will permit such payments to be made without withholding or at a reduced rate of withholding. In addition, any Lender, if reasonably requested by the Borrower, shall deliver such other documentation prescribed by applicable law or reasonably requested by the Borrower as will enable the Borrower to determine whether or not such Lender is subject to backup withholding or information reporting requirements. Notwithstanding anything to the contrary in the preceding two sentences, the completion, execution and submission of such documentation (other than such documentation set forth in Sections 2.6(d)(ii)(A), (ii)(B) and (ii)(D) below) shall not be required if in the Lender's reasonable judgment such completion, execution or submission would subject such Lender to any material unreimbursed cost or expense or would materially prejudice the legal or commercial position of such Lender.

(ii) Without limiting the generality of the foregoing,

(A) any Lender that is a U.S. Person shall deliver to the Borrower on or prior to the date on which such Lender becomes a Lender under this Agreement (and from time to time thereafter upon the reasonable request of the Borrower), executed copies of IRS Form W-9 certifying that such Lender is exempt from U.S. federal backup withholding tax;

(B) any Lender that is not a U.S. Person shall, to the extent it is legally entitled to do so, deliver to the Borrower (in such number of copies as shall be requested by the Borrower) on or prior to the date on which such Lender becomes a Lender under this Agreement (and from time to time thereafter upon the reasonable request of the Borrower), whichever of the following is applicable:

(1) in the case of a non-U.S. Lender claiming the benefits of an income tax treaty to which the United States is a party (x) with respect to payments of interest under any Loan Document, executed copies of IRS Form W-8BEN or W-8BEN-E establishing an exemption from, or reduction of, U.S. federal withholding Tax pursuant to the "interest" article of such tax treaty and (y) with respect to any other applicable payments under any Loan Document, IRS Form W-8BEN or W-8BEN-E establishing an exemption from, or reduction of, U.S. federal withholding Tax pursuant to the "business profits" or "other income" article of such tax treaty;

(2) executed copies of IRS Form W-8ECI;

(3) in the case of a non-U.S. Lender claiming the benefits of the exemption for portfolio interest under Section 881(c) of the Code, (x) a certificate substantially in the form of Exhibit F-1 to the effect that such non-U.S. Lender is not a "bank" within the meaning of Section 881(c)(3)(A) of the Code, a "10 percent shareholder" of the Borrower within the meaning of

Section 881(c)(3)(B) of the Code, or a "controlled foreign corporation" described in Section 881(c)(3)(C) of the Code (a "U.S. Tax Compliance Certificate") and (y) executed copies of IRS Form W-8BEN or W-8BEN-E; or

(4) to the extent a non-U.S. Lender is not the beneficial owner, executed copies of IRS Form W-8IMY, accompanied by IRS Form W-8ECI, IRS Form W-8BEN or W-8BEN-E, a U.S. Tax Compliance Certificate substantially in the form of Exhibit F-2 or Exhibit F-3, IRS Form W-9, and/or other certification documents from each beneficial owner, as applicable; *provided that* if the non-U.S. Lender is a partnership and one or more direct or indirect partners of such non-U.S. Lender are claiming the portfolio interest exemption, such non-U.S. Lender may provide a U.S. Tax Compliance Certificate substantially in the form of Exhibit F-4 on behalf of each such direct and indirect partner;

(C) any non-U.S. Lender shall, to the extent it is legally entitled to do so, deliver to the Borrower (in such number of copies as shall be requested by the Borrower) on or prior to the date on which such non-U.S. Lender becomes a Lender under this Agreement (and from time to time thereafter upon the reasonable request of the Borrower), executed copies of any other form prescribed by applicable law as a basis for claiming exemption from or a reduction in U.S. federal withholding Tax, duly completed, together with such supplementary documentation as may be prescribed by applicable law to permit the Borrower to determine the withholding or deduction required to be made; and

(D) if a payment made to a Lender under any Loan Document would be subject to U.S. federal withholding Tax imposed by FATCA if such Lender were to fail to comply with the applicable reporting requirements of FATCA (including those contained in Section 1471(b) or 1472(b) of the Code, as applicable), such Lender shall deliver to the Borrower at the time or times prescribed by law and at such time or times reasonably requested by the Borrower such documentation prescribed by applicable law (including as prescribed by Section 1471(b)(3)(C)(i) of the Code) and such additional documentation reasonably requested by the Borrower as may be necessary for the Borrower to comply with their obligations under FATCA and to determine that such Lender has complied with such Lender's obligations under FATCA or to determine the amount to deduct and withhold from such payment. Solely for purposes of this clause (D), "FATCA" shall include any amendments made to FATCA after the date of this Agreement.

(e) Each Lender agrees that if any form or certification it previously delivered expires or becomes obsolete or inaccurate in any respect, it shall update such form or certification or promptly notify the Borrower in writing of its legal inability to do so.

(f) If any Recipient determines, in its sole discretion exercised in good faith, that it has received a refund of any Taxes as to which it has been indemnified pursuant to this Section 2.6 (including by the payment of additional amounts pursuant to this Section 2.6), it shall pay to the Borrower an amount equal to such refund (but only to the extent of indemnity payments made under this Section with respect to the Taxes giving rise to such refund), net of all out-of-pocket expenses (including Taxes) of such Recipient and without interest (other than any interest paid by the relevant Governmental Authority with respect to such refund). The Borrower, upon the request of such Recipient, shall repay to such indemnified party the amount paid over pursuant to this paragraph (e) (plus any penalties, interest or

other charges imposed by the relevant Governmental Authority) in the event that such Recipient is required to repay such refund to such Governmental Authority. Notwithstanding anything to the contrary in this subsection, in no event will the applicable Recipient be required to pay any amount to the Borrower pursuant to this subsection the payment of which would place the Recipient in a less favorable net after-Tax position than such Recipient would have been in if the Tax subject to indemnification and giving rise to such refund had not been deducted, withheld or otherwise imposed and the indemnification payments or additional amounts with respect to such Tax had never been paid. This subsection shall not be construed to require any Recipient to make available its tax returns (or any other information relating to its taxes that it deems confidential) to the Borrower or any other Person.

2.7 Increased Costs.

(a) Increased Costs Generally. If any Change in Law shall:

(i) impose, modify or deem any reserve, special deposit, compulsory loan, insurance charge or similar requirement against assets of, deposits with or for the account of, or credit extended or participated in by, any Lender;

(ii) subject any Recipient to any Taxes (other than (A) Indemnified Taxes, (B) Taxes described in clauses (b) through (d) of the definition of Excluded Taxes and (C) Connection Income Taxes) on its loans, loan principal, commitments, or other obligations, or its deposits, reserves, other liabilities or capital attributable thereto; or

(iii) impose on any other condition, cost or expense (other than Taxes) affecting this Agreement or the Loans made by such Lender or participation therein;

and the result of any of the foregoing shall be to increase the cost to such Lender of making, continuing or maintaining any Loan, or to reduce the amount of any sum received or receivable by such Lender hereunder (whether of principal, interest or any other amount) then, upon request of such Lender, the Borrower will pay to such Lender, such additional amount or amounts as will compensate such Lender, for such additional costs incurred or reduction suffered.

(b) Capital Requirements. If any Lender determines that any Change in Law affecting such Lender or any lending office of such Lender or such Lender's holding company, if any, regarding capital or liquidity requirements, has or would have the effect of reducing the rate of return on such Lender's capital or on the capital of such Lender's holding company, if any, as a consequence of this Agreement or the Loans made by such Lender to a level below that which such Lender or such Lender's holding company could have achieved but for such Change in Law (taking into consideration such Lender's policies and the policies of such Lender's holding company with respect to capital adequacy), then from time to time the Borrower will pay to such Lender such additional amount or amounts as will compensate such Lender or such Lender's holding company for any such reduction suffered.

(c) Certificates for Reimbursement. A certificate of a Lender setting forth the amount or amounts necessary to compensate such Lender or its holding company, as the case may be, as specified in paragraph (a) or (b) of this Section 2.7 and delivered to the Borrower, shall be conclusive absent manifest error. The Borrower shall pay such Lender the amount shown as due on any such certificate within ten (10) days after receipt thereof.

(d) Delay in Requests. Failure or delay on the part of any Lender to demand compensation pursuant to this Section 2.7 shall not constitute a waiver of such Lender's right to demand such compensation; *provided*, *that*, the Borrower shall not be required to compensate a Lender pursuant to

this Section 2.7 for any increased costs incurred or reductions suffered more than nine (9) months prior to the date that such Lender notifies the Borrower of the Change in Law giving rise to such increased costs or reductions, and of such Lender's intention to claim compensation therefor (except that, if the Change in Law giving rise to such increased costs or reductions is retroactive, then the nine-month period referred to above shall be extended to include the period of retroactive effect thereof).

2.8 Mitigation Obligations; Replacement of Lenders.

(a) Designation of a Different Lending Office. If any Lender requests compensation under Section 2.7, or requires the Borrower to pay any Indemnified Taxes or additional amounts to any Lender or any Governmental Authority for the account of any Lender pursuant to Section 2.6, then such Lender shall (at the request of the Borrower) use reasonable efforts to designate a different lending office for funding or booking its Loans hereunder or to assign its rights and obligations hereunder to another of its offices, branches or affiliates, if, in the judgment of such Lender, such designation or assignment (i) would eliminate or reduce amounts payable pursuant to Sections 2.6 or 2.7, as the case may be, in the future, and (ii) would not subject such Lender to any unreimbursed cost or expense and would not otherwise be disadvantageous to such Lender. The Borrower hereby agrees to pay all reasonable costs and expenses incurred by any Lender in connection with any such designation or assignment.

(b) Replacement of Lenders. If any Lender requests compensation under Section 2.7, or if the Borrower is required to pay any Indemnified Taxes or additional amounts to any Lender or any Governmental Authority for the account of any Lender pursuant to Section 2.6 and, in each case, such Lender has declined or is unable to designate a different lending office in accordance with Section 2.8(a), or if any Lender is a Defaulting Lender or a Non-Consenting Lender, then the Borrower may, at its sole expense and effort, upon notice to such Lender and the Collateral Agent, require such Lender to assign and delegate, without recourse (in accordance with and subject to the restrictions contained in, and consents required by, Section 10.4), all of its interests, rights (other than its existing rights to payments pursuant to Section 2.6 or 2.7) and obligations under this Agreement and the related Loan Documents to a permitted assignee that shall assume such obligations (which assignee may be another Lender, if a Lender accepts such assignment); *provided*, *that*:

(i) such Lender shall have received payment of an amount equal to the outstanding principal of its Loans, accrued interest thereon, accrued fees and all other amounts payable to it hereunder and under the other Loan Documents from the assignee (to the extent of such outstanding principal and accrued interest and fees) or the Borrower (in the case of all other amounts);

(ii) in the case of any such assignment resulting from a claim for compensation under Section 2.7 or payments required to be made pursuant to Section 2.6, such assignment will result in a reduction in such compensation or payments thereafter;

(iii) such assignment does not conflict with applicable law; and

(iv) in the case of any assignment resulting from a Lender becoming a Non-Consenting Lender, the applicable assignee shall have consented to the applicable amendment, waiver or consent.

A Lender shall not be required to make any such assignment or delegation if, prior thereto, as a result of a waiver by such Lender or otherwise, the circumstances entitling the Borrower to require such assignment and delegation cease to apply.

ARTICLE 3
GUARANTEE BY GUARANTORS

3.1 The Guarantee. The Guarantors hereby jointly and severally guarantee to the Lenders and their successors and assigns the prompt payment in full when due (whether at stated maturity, by acceleration or otherwise) of the Obligations. The Guarantors hereby further agree that if the Borrower shall fail to pay in full when due (whether at stated maturity, by acceleration or otherwise) any of the Obligations, the Guarantors will promptly pay the same, without any demand or notice whatsoever, and that in the case of any extension of time of payment or renewal of any of the Obligations, the same will be promptly paid in full when due (whether at extended maturity, by acceleration or otherwise) in accordance with the terms of such extension or renewal.

3.2 Obligations Unconditional. The obligations of the Guarantors under Section 3.1 are absolute and unconditional irrespective of the value, genuineness, validity, regularity or enforceability of this Agreement, the other Loan Documents or any other agreement or instrument referred to herein or therein, or any substitution, release or exchange of any other guarantee of or security for any of the Obligations, and, to the fullest extent permitted by applicable law, irrespective of any other circumstance whatsoever that might otherwise constitute a legal or equitable discharge or defense of a surety or guarantor (other than the payment in full of all the Obligations), it being the intent of this Section 3.2 that the obligations of the Guarantors hereunder shall be primary, absolute and unconditional under any and all circumstances. Without limiting the generality of the foregoing, it is agreed that the occurrence of any one or more of the following shall not alter or impair the liability of the Guarantors hereunder which shall remain absolute and unconditional as described above:

(a) at any time or from time to time, without notice to such Guarantors, the time for any performance of or compliance with any of the Obligations shall be extended, or such performance or compliance shall be waived;

(b) any of the acts mentioned in any of the provisions hereof or of the other Loan Documents or any other agreement or instrument referred to herein or therein shall be done or omitted;

(c) the maturity of any of the Obligations shall be accelerated, or any of the Obligations shall be modified, supplemented or amended in any respect, or any right hereunder or under the other Loan Documents or any other agreement or instrument referred to herein or therein shall be waived or any other guarantee of any of the Obligations or any security therefor shall be released or exchanged in whole or in part or otherwise dealt with; or

(d) any lien or security interest granted to, or in favor of, the Lenders or the Collateral Agent for the benefit of the Lenders as security for any of the Obligations shall fail to be perfected.

The Guarantors hereby expressly waive diligence, presentment, demand of payment, protest and all notices whatsoever, and any requirement that the Lenders exhaust any right, power or remedy or proceed against the Borrower hereunder or under the other Loan Documents or any other agreement or instrument referred to herein or therein, or against any other Person under any other guarantee of, or security for, any of the Obligations.

3.3 Reinstatement. The obligations of the Guarantors under this Article 3 shall be automatically reinstated if and to the extent that for any reason any payment by or on behalf of the Borrower in respect of the Obligations is rescinded or must be otherwise restored by any holder of any of the Obligations, whether as a result of any proceedings in bankruptcy or reorganization or otherwise, and

each Guarantor agrees that it will indemnify the Lenders on demand for all reasonable and documented out-of-pocket costs and expenses (including the reasonable and documented fees and expenses of outside counsel) incurred by the Lenders in connection with such rescission or restoration, including any such costs and expenses incurred in defending against any claim alleging that such payment constituted a preference, fraudulent transfer or similar payment under any bankruptcy, insolvency or similar law.

3.4 Subrogation. Until such time as the Obligations shall have been indefensibly paid in full (other than contingent indemnification obligations for which no claim has been asserted), each of the Guarantors hereby waives all rights of subrogation or contribution, whether arising by contract or operation of law (including, without limitation, any such right arising under the Federal Bankruptcy Code of 1978, as amended) or otherwise by reason of any payment by it pursuant to the provisions of this Article 3 and further agrees with the Borrower for the benefit of each creditor of the Borrower (including, without limitation, the Lenders) that any such payment by it shall constitute a contribution of capital by such Guarantor to the Borrower.

3.5 Remedies. The Guarantors agree that, as between the Guarantors and the Lenders, the Obligations hereunder may be declared to be forthwith due and payable as provided in Section 9.1 (and shall be deemed to have become automatically due and payable in the circumstances provided in Section 9.1) for purposes of Section 3.1 notwithstanding any stay, injunction or other prohibition preventing such declaration (or such Obligations from becoming automatically due and payable) as against the Borrower and that, in the event of such declaration (or such Obligations being deemed to have become automatically due and payable), such Obligations (whether or not due and payable) shall forthwith become due and payable by the Guarantors for purposes of Section 3.1.

3.6 Instrument for the Payment of Money. Each of the Guarantors hereby acknowledges that the guarantee in this Article 3 constitutes an instrument for the payment of money, and consents and agrees that the Lenders, at their sole option, in the event of a dispute by such Guarantor in the payment of any moneys due hereunder, shall have the right to summary judgment or such other expedited procedure as may be available for a suit on a note or other instrument for the payment of money.

3.7 Continuing Guarantee. The guarantee in this Article 3 is a continuing guarantee, and shall apply to all Obligations whenever arising.

3.8 General Limitation on Amount of Obligations Guaranteed. In any action or proceeding involving any state or non-U.S. corporate law, or any state or Federal or non-U.S. bankruptcy, insolvency, reorganization or other law affecting the rights of creditors generally, if the obligations of the Guarantors under Section 3.1 would otherwise be held or determined to be void, invalid or unenforceable, or subordinated to the claims of any other creditors, on account of the amount of its liability under Section 3.1, then, notwithstanding any other provision hereof to the contrary, the amount of such liability shall, without any further action by the Guarantors, the Lenders, or any other Person, be automatically limited and reduced to the highest amount that is valid and enforceable under applicable law and not subordinated to the claims of other creditors as determined in such action or proceeding.

ARTICLE 4
THE COLLATERAL

4.1 Grant of Security Interest. As security for the due and punctual payment and performance of the Obligations, each Credit Party hereby grants to the Collateral Agent, for the benefit of the Lenders, a continuing security interest in and lien on the following tangible and intangible property and assets of such Credit Party, whether now owned or existing or hereafter acquired or arising, together

with any and all additions thereto and replacements therefor and Proceeds and products thereof (collectively referred to for purposes of this Article 4 as "Collateral"):

(a) all present and future Goods, Inventory (including, without limitation, all merchandise, raw materials, work in process, finished Goods and supplies), machinery, Equipment, motor vehicles, rolling stock, tools, furniture, Fixtures, office supplies, computers, computer software and associated Equipment, whether now owned or hereafter acquired, including, without limitation, all Goods used in the operation of the business of such Credit Party and all As-Extracted Collateral;

(b) all rights under all present and future authorizations, permits, licenses and franchises issued, granted or licensed to such Credit Party for the operation of its business;

(c) the Pledged Collateral;

(d) all rights under all present and future vendor or customer contracts and all franchise, distribution, design, consulting, construction, engineering, management and advertising and related agreements;

(e) all rights under all present and future leases of real and personal property;

(f) all now owned and hereafter acquired, created, or arising Health-Care-Insurance Receivables;

(g) all Commercial Tort Claims indicated in the Perfection Certificate attached hereto as Exhibit C, as supplemented from time to time pursuant to Section 4.2(i); and

(h) all present and future Accounts, cash, cash equivalents, deposits, Deposit Accounts, Securities Accounts, loss carry back, tax refunds, insurance proceeds, premiums, rebates and refunds, choses in action, Investment Property, Securities, partnership interests, limited liability company interests, contracts, contract rights, General Intangibles, any information stored on any medium, including electronic medium, related to any of the personal property of such Credit Party, all financial books and records and other books and records relating, in any manner, to the business of such Credit Party, all proposals and cost estimates and rights to performance, all Instruments and Promissory Notes, Documents and Chattel Paper, and all debts, obligations and liabilities in whatever form owing to such Credit Party from any Person, firm or corporation or any other legal entity, whether now existing or hereafter arising, now or hereafter received by or belonging or owing to such Credit Party; and all guaranties and security therefor, and all letters of credit, Letter-of-Credit Rights, and other Supporting Obligations in respect of such debts, obligations and liabilities.

Notwithstanding the foregoing, the Collateral does not include any Intellectual Property or goodwill associated therewith; *provided*, *however*, for the avoidance of doubt, the Collateral shall include all Accounts and all Proceeds of Intellectual Property. If a judicial authority (including a U.S. Bankruptcy Court) would hold that a security interest in the underlying Intellectual Property is necessary to have a security interest in such Accounts and such property that are Proceeds of Intellectual Property, then the Collateral shall automatically, and effective as of the Effective Time, include the Intellectual Property to the extent necessary to permit perfection of the Lenders' security interest in such Accounts and such other property of the Credit Parties that are Proceeds of the Intellectual Property.

Notwithstanding the foregoing, the Collateral shall not include (a) any lease, license, contract, property rights or agreement to which any Credit Party is a party or any of its rights or interests thereunder if and for so long as the grant of such security interest shall constitute or result in (i) the

abandonment, invalidation or unenforceability of any right, title or interest of any Credit Party therein or (ii) a breach or termination pursuant to the terms of, or a default under, any such lease, license, contract property rights or agreement (other than to the extent that any such term would be rendered ineffective pursuant to the UCC (or any successor provision or provisions) of any relevant jurisdiction or any other applicable law (including Debtor Relief Laws) or principles of equity); *provided*, *however*, that the Collateral shall include and such security interest shall attach immediately at such time as the condition causing such abandonment, invalidation or unenforceability shall be remedied and to the extent severable, shall attach immediately to any portion of such lease, license, contract, property rights or agreement that does not result in any of the consequences specified in (i) or (ii) above, and to all Accounts, accounts receivable, money or other amounts due to a Credit Party thereunder or any Proceeds resulting from the Disposition thereof; (b) any property which, subject to the terms of Section 8.1(d), is subject to a Lien of the type described in Section 8.2(k) pursuant to documents that prohibit such Credit Party from granting any other Liens in such property (other than to the extent that any such prohibition would be rendered ineffective pursuant to the UCC (or any successor provision or provisions) of any relevant jurisdiction or any other applicable law (including Debtor Relief Laws) or principles of equity); (c) any owned real property of any Credit Party; (d) any bank accounts (other than any Controlled Account) and the deposits therein if (i) the terms of the documentation relating thereto require such bank accounts and the deposits therein to be pledged, the grant of a security interest or lien therein is prohibited under the terms of such documentation, and such prohibition has not been waived or the consent of the other party to such documentation has not been obtained, and (ii) such deposits are Permitted Liens under Section 8.2(j); (e) motor vehicles, airplanes and other assets subject to certificates of title in respect of which perfection of a Lien is not governed by the UCC; (f) any of the outstanding voting capital stock or other voting equity interests of a (1) Foreign Subsidiary or (2) FSHCO, in each case to the extent not required to be pledged pursuant to Section 7.10; (g) any authorizations, permits, licenses and franchises and other property to the extent that a grant of a security interest is prohibited by applicable law (other than to the extent that any such prohibition or consent would be rendered ineffective pursuant to the UCC (or any successor provision or provisions) of any relevant jurisdiction or any other applicable law (including Debtor Relief Laws) or principles of equity); *provided*, *however*, that the Collateral shall include and such security interest shall attach immediately at such time prohibition or requirement for consent shall no longer be in effect and to the extent severable, shall attach immediately to any portion of such property not subject to such prohibition or consent requirement; and (h) those assets as to which the Collateral Agent reasonably determines, in consultation with the Borrower, that the costs of obtaining such security interests in such assets or perfection thereof are excessive in relation to the benefit to the Lenders of the security to be afforded thereby (the excluded collateral referenced in the foregoing clauses (a) through (h) of this paragraph or otherwise excluded pursuant to this paragraph, together the "Excluded Collateral").

Any of the foregoing terms which are defined in the UCC shall have the meaning provided in the UCC, as amended and in effect from time to time, as supplemented and expanded by the foregoing.

4.2 Special Warranties and Covenants of the Credit Parties. Each Credit Party hereby warrants and covenants to the Lenders that:

(a) Such Credit Party has delivered to the Lenders a Perfection Certificate in substantially the form of Exhibit C hereto. All information set forth in such Perfection Certificate is true and correct in all material respects and the facts contained in such Perfection Certificate are accurate in all material respects as of the date of this Agreement and the date on which such Credit Party becomes a party hereto, respectively.

(b) No Credit Party will change its jurisdiction of organization, principal or any other place of business, or the location of any Collateral from the locations set forth in the Perfection Certificate delivered by such Credit Party, or make any change in its name, without, in any such case, at least ten

(10) days' prior written notice to the Lenders; *provided that* the Inventory and Equipment of such Credit Party may be (i) in transit between locations set forth in the Perfection Certificate, (ii) in transit to customers, (iii) not located in such locations in the ordinary course of business or as a result of a Casualty Event or (iv) in the possession of manufacturers or processors in any jurisdiction in which all necessary UCC financing statements have been filed by the Lenders and with respect to which the Lenders have received waiver letters from all landlords, warehousemen and processors in form and substance reasonably acceptable to the Lenders.

(c) Except for Collateral that is obsolete, no longer used in their business or *de minimis* Collateral, the Credit Parties will keep the Collateral in good order and repair (normal wear and tear excepted) and adequately insured at all times in accordance with the provisions of Section 7.5. The Credit Parties will pay promptly when due all material taxes and assessments on the Collateral or for its use or operation, except for taxes and assessments permitted to be contested as provided in Section 7.4. Following the occurrence and during the continuance of an Event of Default, the Lenders may at their option discharge any taxes or Liens to which any Collateral is at any time subject (other than Permitted Liens), and may, upon the failure of the Credit Parties to do so in accordance with this Agreement, purchase insurance on any Collateral and pay for the repair, maintenance or preservation thereof, and each Credit Party agrees to reimburse the Lenders on demand for any payments or expenses incurred by the Lenders pursuant to the foregoing authorization and any unreimbursed amounts shall constitute Obligations for all purposes hereof.

(d) The Lenders may from time to time (and in no event more than once per fiscal quarter so long as no Event of Default has occurred and is continuing) request and each Credit Party shall deliver copies of all customer lists and vendor lists.

(e) To the extent, if any, that such Credit Party's signature is required therefor, each Credit Party will promptly execute and deliver to the Collateral Agent such financing statements and amendments thereto, certificates and other documents or instruments as may be necessary to enable the Collateral Agent, for the benefit of the Lenders, to perfect or from time to time renew the security interest granted hereby, including, without limitation, such financing statements and amendments thereto, certificates and other documents as may be necessary to perfect a security interest in any additional Collateral hereafter acquired by such Credit Party or in any replacements or proceeds thereof. Each Credit Party authorizes and appoints the Collateral Agent, in case of need, to execute such financing statements, certificates and other documents pertaining to the Collateral Agent's security interest in the Collateral for the benefit of the Lenders, in its stead if such Credit Party's signature is required therefor and such Credit Party fails to so execute such documents, with full power of substitution, as such Credit Party's attorney in fact.

(f) Each Credit Party hereby irrevocably authorizes the Collateral Agent and the Lenders, at any time and from time to time, to file in any jurisdiction financing statements and amendments thereto that (i) indicate the Collateral (x) as all assets of such Credit Party or words of similar effect, regardless of whether any particular asset falls within the scope of Article 9 of the UCC of the State of New York or such jurisdiction or (y) as being of an equal or lesser scope or with greater detail and (ii) which contain any other information required by Article 9 of the UCC (including Part 5 thereof) for the sufficiency or filing office acceptance of any financing statement or amendment, including whether (A) any Credit Party is an organization, the type of organization and any organization identification number issued to such Credit Party and (B) in the case of a financing statement filed as a fixture filing or indicating Collateral as as-extracted collateral or timber to be cut, a sufficient description of the real property to which the Collateral relates. The Credit Parties agree to furnish any such information to the Lenders promptly upon request.

(g) To the extent any Credit Party shall, now or at any time hereafter, hold or acquire any Promissory Note or other Instrument or Chattel Paper the aggregate value of which exceeds $250,000, such Credit Party will promptly notify the Lenders thereof and, at the request and option of the Lenders, such Credit Party will deliver such Promissory Note or other Instrument or tangible Chattel Paper to the Lenders to be held as Collateral hereunder, together with an endorsement thereof reasonably satisfactory in form and substance to the Lenders.

(h) If, now or at any time hereafter, any Credit Party shall obtain or hold any Electronic Chattel Paper with an aggregate value exceeding $250,000 or any Investment Property, such Credit Party will promptly notify the Lenders thereof and, at the request and option of the Lenders, such Credit Party will take or cause to be taken such steps as the Lenders may reasonably request for the Collateral Agent to obtain "control" (as provided in Sections 9-105 and 9-106 of the UCC of the relevant jurisdiction, as amended and in effect from time to time) of such Collateral.

(i) No Credit Party holds on the date of this Agreement any Commercial Tort Claims, except as indicated in the Perfection Certificate attached hereto as Exhibit C and except for Commercial Tort Claims that the Credit Party has not elected to assert against the respective third party. If any of the Credit Parties shall at any time have or acquire a Commercial Tort Claim that the Credit Party has elected to assert against the respective third party, such Credit Party shall promptly notify the Lenders in a writing signed by such Credit Party of the brief details thereof and grant to the Collateral Agent, for the benefit of the Lenders, in such writing a security interest therein and in the Proceeds thereof, all upon the terms of this Agreement, with such writing to be in form and substance reasonably satisfactory to the Lenders.

(j) If any Credit Party has accounts receivable in respect of which the Account Debtor is located in Minnesota, the Credit Parties represent and warrant that the applicable Credit Party has filed and shall file all legally-required Notice of Business Activities Reports and comparable reports with the appropriate government authorities.

(k) Except to the extent that a Securities Account is an Excluded Account pursuant to Section 7.13(a), to the extent any Credit Party shall, now or at any time hereafter, maintain or acquire any Securities Accounts, such Credit Party will (within 60 days of the date that the applicable Credit Party acquired rights therein) execute and deliver (and, with respect to any Collateral consisting of a Securities Account, cause the applicable Securities Intermediary to execute and deliver) to the Collateral Agent all control agreements, assignments, instruments or other documents as reasonably requested by the Collateral Agent for the purposes of obtaining and maintaining "control" (as provided in Section 8-106 of the UCC of the relevant jurisdiction, as amended and in effect from time to time) of such Collateral.

4.3 Delivery of Pledged Collateral.

(a) Each Credit Party represents and warrants that all certificates, agreements or instruments representing or evidencing the Pledged Collateral in existence on the Closing Date (if any), as set forth on Schedule 4.3, have been delivered to the Collateral Agent, for the benefit of the Lenders, in suitable form for transfer by delivery or accompanied by duly executed instruments of transfer or assignment in blank. Each Credit Party hereby agrees that all certificates, agreements or instruments representing or evidencing Pledged Collateral acquired by such Credit Party after the Closing Date shall promptly (but in any event within five (5) Business Days after receipt thereof by such Credit Party) be delivered to and held by or on behalf of the Collateral Agent, for the benefit of the Lenders, pursuant hereto. All Pledged Collateral consisting of Certificated Securities shall be in suitable form for transfer by delivery or shall be accompanied by duly executed instruments of transfer or assignment in blank, all in form and substance reasonably satisfactory to the Collateral Agent or the Lenders. The Collateral

Agent shall have the right, at any time upon the occurrence and during the continuance of any Event of Default, to endorse, assign or otherwise transfer to or to register in the name of the Collateral Agent, the Lenders or any of their nominees or endorse for negotiation any or all of the Pledged Collateral, without any indication that such Pledged Collateral are subject to the security interest hereunder. In addition, upon the occurrence and during the continuance of an Event of Default, the Lenders shall have the right at any time to exchange certificates representing or evidencing Pledged Collateral for certificates of smaller or larger denominations.

4.4 Uncertificated Pledged Collateral.

(a) Each Credit Party hereby agrees that if any of the Pledged Collateral is at any time not evidenced by certificates of ownership, then each applicable Credit Party shall, to the extent permitted by applicable law, (i) cause (or, if the issuer is not a Subsidiary, use commercially reasonable efforts to cause) the issuer to (x) cause such Pledged Collateral to constitute an "uncertificated security" (as such term is defined in Article 9 of the UCC as in effect in the State of New York), and (y) execute and deliver to the Collateral Agent or the Lenders an acknowledgment of the pledge of such Pledged Collateral and an agreement that it will comply with instructions originated by the Collateral Agent without further consent of such Credit Party in a form that is reasonably satisfactory to the Collateral Agent or the Lenders, (ii) if necessary or desirable to perfect a security interest in such Pledged Collateral, execute any customary pledge forms or other documents necessary or appropriate to complete the pledge and give the Collateral Agent, for the benefit of the Lenders, the right to transfer such Pledged Collateral under the terms hereof, and (iii) after the occurrence and during the continuance of any Event of Default, upon written request by the Collateral Agent or the Lenders, (A) cause (or, if the issuer is not a Subsidiary, use commercially reasonable efforts to cause) the Organization Documents of each such issuer to be amended to provide that such Pledged Collateral shall be treated as "securities" for purposes of the UCC, and (B) cause (or, if the issuer is not a Subsidiary, use commercially reasonable efforts to cause) such Pledged Collateral to become certificated and delivered to the Collateral Agent, for the benefit of the Lenders, in accordance with the provisions of Section 4.3 hereof. At the reasonable request of the Collateral Agent, each Credit Party hereby agrees that if any of the Pledged Collateral are at any time not evidenced by certificates of ownership, such Credit Party shall, and shall cause the issuer thereof to (or if the issuer is not a Subsidiary, use commercially reasonable efforts to cause the issuer thereof to) enter agreements granting "control" to the Collateral Agent, for the benefit of the Lenders, with respect to such uncertificated Pledged Collateral or take any other action reasonably requested by the Collateral Agent or the Lenders in order to perfect the security interest therein prior to all other Liens on such Pledged Collateral except, with respect to any equity interests of Subsidiaries, for Permitted Liens which have priority over, or are *pari passu* with, the security interest on such Pledged Collateral by operation of law and with respect to any other uncertificated securities, except for Permitted Liens.

4.5 Certain Provisions Concerning Pledged Collateral. Until all Obligations have been paid in full each Credit Party covenants and agrees with the Lenders that:

(a) Pledge of Additional Pledged Collateral. Each Credit Party shall, upon obtaining any Pledged Collateral of any Person, accept the same in trust for the benefit of the Lenders and promptly (but in any event within five (5) Business Days after receipt thereof) deliver to the Collateral Agent, for the benefit of the Lenders, a pledge amendment, duly executed by such Credit Party, in substantially the form of Exhibit E hereto (each, a "Pledge Amendment"), and the certificates and other documents required under Section 4.3 and Section 4.4 hereof in respect of the additional Pledged Collateral which are to be pledged pursuant to this Agreement, and confirming the attachment of the Lien hereby created on and in respect of such additional Pledged Collateral. Each Credit Party hereby authorizes the Collateral Agent, for the benefit of the Lenders, to attach each Pledge Amendment to this Agreement and

agrees that all Pledged Collateral listed on any Pledge Amendment delivered to the Collateral Agent shall for all purposes hereunder be considered Collateral.

(b) Voting Rights; Distributions; etc.

(i) So long as no Event of Default shall have occurred and be continuing and the Lenders shall not have delivered the applicable notice under Section 4.5(b)(iii):

(A) Each Credit Party shall be entitled to exercise any and all voting and other consensual rights pertaining to the Pledged Collateral or any part thereof for any purpose not inconsistent with the terms of this Agreement or any other Loan Document; *provided, however*, that no Credit Party shall in any event exercise such rights in any manner which could reasonably be expected to result in a Material Adverse Effect.

(B) Each Credit Party shall be entitled to receive and retain, and to utilize free and clear of the Lien hereof, any and all Distributions, but only if and to the extent made in accordance with the provisions of this Agreement; *provided, however*, that any and all such Distributions consisting of rights or interests in the form of certificated securities shall be forthwith delivered to the Collateral Agent, for the benefit of the Lenders, to hold as Collateral and shall, if received by any Credit Party, be received in trust for the benefit of the Lenders, be segregated from the other property or funds of such Credit Party and be promptly (but in any event within five (5) Business Days after receipt thereof) delivered to the Collateral Agent, for the benefit of the Lenders, as Collateral in the same form as so received (with any necessary endorsement).

(ii) So long as no Event of Default shall have occurred and be continuing, the Lenders shall be deemed without further action or formality to have granted to each Credit Party all necessary consents relating to voting rights which do not violate this Agreement and shall, if necessary, upon written request of any Credit Party and at the sole cost and expense of the Credit Parties, from time to time execute and deliver (or cause to be executed and delivered) to such Credit Party all such instruments as such Credit Party may reasonably request in order to permit such Credit Party to exercise the voting and other rights which it is entitled to exercise pursuant to Section 4.5(b)(i)(A) hereof and to receive the Distributions which it is authorized to receive and retain pursuant to Section 4.5(b)(i)(B) hereof.

(iii) Upon the occurrence and during the continuance of any Event of Default and receipt by the Borrower of written notice from the Lenders to the Credit Parties that the Collateral Agent is exercising its rights under Section 4.5(b)(iii)(A) and/or (B):

(A) All rights of each Credit Party to exercise the voting and other consensual rights it would otherwise be entitled to exercise pursuant to Section 4.5(b)(i)(A) hereof shall immediately cease, and all such rights shall thereupon become vested in the Collateral Agent, for the benefit of the Lenders, which shall thereupon have the sole right to exercise such voting and other consensual rights.

(B) All rights of each Credit Party to receive Distributions which it would otherwise be authorized to receive and retain pursuant to Section 4.5(b)(i)(B) hereof shall immediately cease and all such rights shall thereupon become vested in the Collateral Agent, for the benefit of the Lenders, which shall thereupon have the sole right to receive and hold as Collateral such Distributions.

(iv) Each Credit Party shall, at its sole cost and expense, from time to time execute and deliver to the Collateral Agent or the Lenders appropriate instruments as the Collateral Agent or the Lenders may reasonably request in order to permit the Collateral Agent, for the benefit of the Lenders, to exercise the voting and other rights which it may be entitled to exercise pursuant to Section 4.5(b)(iii)(A) hereof and to receive all Distributions which it may be entitled to receive under Section 4.5(b)(iii)(B) hereof.

(v) All Distributions which are received by any Credit Party contrary to the provisions of Section 4.5(b)(i)(B) or Section 4.5(b)(iii)(B) hereof shall be received in trust for the benefit of the Lenders, shall be segregated from other funds of such Credit Party and shall immediately be paid over to the Collateral Agent, for the benefit of the Lenders, as Collateral in the same form as so received (with any necessary endorsement).

(c) Defaults, etc. Each Credit Party hereby represents and warrants that on the Closing Date, and any new Credit Party hereby represents and warrants that on and as of the date such Person becomes a Credit Party, (i) such Credit Party is not in default in any material respect in the payment of any portion of any mandatory capital contribution, if any, required to be made under any agreement to which such Credit Party is a party relating to the Pledged Collateral pledged by it and such Credit Party is not in violation of any other provisions of any such agreement to which such Credit Party is a party, or otherwise in default or violation thereunder, (ii) to each Credit Party's knowledge, no Pledged Collateral pledged by such Credit Party is subject to any defense, offset or counterclaim, nor have any of the foregoing been asserted or alleged against such Credit Party by any Person with respect thereto, and (iii) there are no certificates, instruments, documents or other writings (other than the Organization Documents and certificates representing such Pledged Collateral that have been delivered to the Collateral Agent) which evidence any Pledged Collateral of such Credit Party.

4.6 Fixtures, etc. It is the intention of the parties hereto that none of the Collateral shall become Fixtures and each Credit Party will take all such reasonable action or actions as may be necessary to prevent any of the Collateral from becoming Fixtures. Without limiting the generality of the foregoing, each Credit Party will, if requested by the Lenders, use commercially reasonable efforts to obtain a Landlord's Waiver and Consent from each lessor of a Material Leasehold Property on which any of the Collateral is or is to be located to the extent requested by the Lenders.

4.7 Right of Collateral Agent and Lenders to Dispose of Collateral, etc. Upon the occurrence and during the continuance of any Event of Default, but subject to the provisions of the UCC or other applicable law, in addition to all other rights under the UCC and any other applicable law and under the Loan Documents, the Lenders and the Collateral Agent, for the benefit of the Lenders, shall have the right to take possession of the Collateral and, in addition thereto, the right to enter upon any premises on which the Collateral or any part thereof may be situated and remove the same therefrom. The Collateral Agent or the Lenders may require the Credit Parties to make the Collateral (to the extent the same is moveable) available at a place to be designated by the Collateral Agent or the Lenders or transfer any information related to the Collateral to the Collateral Agent or the Lenders by electronic medium. Unless the Collateral is perishable or threatens to decline speedily in value or is of a type customarily sold on a recognized market, the Collateral Agent or the Lenders will give the Credit Parties at least ten (10) days' prior written notice of the time and place of any public sale thereof or of the time after which any private sale or any other intended disposition thereof is to be made. Any such notice shall be deemed to meet any requirement hereunder or under any applicable law (including the UCC) that reasonable notification be given of the time and place of such sale or other disposition.

4.8 Right of Lenders to Use and Operate Collateral, etc. Upon the occurrence and during the continuance of any Event of Default, subject to the provisions of the UCC or other applicable law, the

Lenders and the Collateral Agent, for the benefit of the Lenders, shall have the right and power to take possession of all or any part of the Collateral, and to exclude the Credit Parties and all persons claiming under the Credit Parties wholly or partly therefrom, and thereafter to hold, store, and/or use, operate, manage and control the same. Upon any such taking of possession, the Lenders and the Collateral Agent, for the benefit of the Lenders, may, from time to time, at the reasonable expense of the Credit Parties, make all such repairs, replacements, alterations, additions and improvements to and of the Collateral as the Collateral Agent or the Lenders may deem proper. In any such case the Lenders and the Collateral Agent, for the benefit of the Lenders, shall have the right to manage and control the Collateral and to carry on the business and to exercise all rights and powers of the Credit Parties in respect thereto as the Collateral Agent or the Lenders shall deem best, including the right to enter into any and all such agreements with respect to the operation of the Collateral or any part thereof as the Collateral Agent or the Lenders may see fit; and the Lenders and the Collateral Agent, for the benefit of the Lenders, shall be entitled to collect and receive all rents, issues, profits, fees, revenues and other income of the same and every part thereof. Such rents, issues, profits, fees, revenues and other income shall be applied to pay the expenses of holding and operating the Collateral and of conducting the business thereof, and of all maintenance, repairs, replacements, alterations, additions and improvements, and to make all payments which the Collateral Agent or the Lenders may be required or may reasonably elect to make, if any, for taxes, assessments, insurance and other charges upon the Collateral or any part thereof, and all other payments which the Collateral Agent or the Lenders may be required or authorized to make under any provision of this Agreement (including reasonable and documented out-of-pocket attorneys' fees, expenses and disbursements). The Lenders and the Collateral Agent, for the benefit of the Lenders, shall apply the remainder of such rents, issues, profits, fees, revenues and other income as provided in Section 4.9.

4.9 Proceeds of Collateral. After deducting all reasonable costs and expenses of collection, storage, custody, sale or other disposition and delivery (including reasonable and documented out-of-pocket attorneys' fees, expenses and disbursements) and all other charges against the Collateral, the Lenders and the Collateral Agent, for the benefit of the Lenders, shall apply the residue of the proceeds of any such sale or disposition to the Obligations in accordance with the terms hereof and any surplus shall be returned to the Credit Parties or to any Person or party lawfully entitled thereto. In the event the proceeds of any sale, lease or other disposition of the Collateral are insufficient to pay all of the Obligations in full, the Credit Parties will be liable for the deficiency, together with interest thereon at the Post-Default Rate, and the cost and expenses of collection of such deficiency, including (to the extent permitted by law), without limitation, reasonable and documented out-of-pocket attorneys' fees, expenses and disbursements.

ARTICLE 5
REPRESENTATIONS AND WARRANTIES

Each Credit Party represents and warrants to the Lenders and the Collateral Agent that:

5.1 Organization; Powers. Each Credit Party and each of its Subsidiaries has been duly formed or organized and is validly existing and in good standing under the laws of its jurisdiction of organization. Each Credit Party has all requisite power and authority to carry on its business as now conducted and is qualified to do business in, and is in good standing in, every jurisdiction where such qualification is required, except where the failure to have such power or authority or to be so qualified or in good standing, individually or in the aggregate, could not reasonably be expected to result in a Material Adverse Effect.

5.2 Authorization; Enforceability. The execution, delivery and performance of the Loan Documents, the borrowing of the Loans and the grant of the security interests pursuant to the Loan

Documents are within the power and authority of the Credit Parties and have been duly authorized by all necessary action on the part of the Credit Parties. This Agreement and the other Loan Documents have been duly authorized, executed and delivered by the Credit Parties and constitute legal, valid and binding obligations of the Credit Parties, enforceable in accordance with their respective terms, subject to applicable bankruptcy, insolvency, reorganization, moratorium or other laws affecting creditors' rights generally and subject to general principles of equity, regardless of whether considered in a proceeding in equity or at law.

5.3 Governmental Approvals; No Conflicts. The execution, delivery and performance of the Loan Documents, the borrowing of the Loans and the grant of the security interests pursuant to the Loan Documents, in each case, by the Credit Parties: (a) do not require any material consent or approval of, registration or filing with, or any other action by, any Governmental Authority which has not been obtained, except as disclosed on Schedule 5.3, (b) will not violate any applicable law, policy, regulation, Health Care Permit or the Organization Documents of any Credit Party or any order of any Governmental Authority, (c) will not violate or result in a default under any indenture, agreement or other instrument binding upon the Credit Parties, or any assets, or give rise to a right thereunder to require any payment to be made by the Credit Parties, except to the extent that such violation or default or right to payment in each case under this clause (c), as the case may be, could not reasonably be expected to result in a Material Adverse Effect, and (d) except for the Liens created by the Loan Documents, will not result in the creation or imposition of any Lien on any asset of the Credit Parties or any of their respective Subsidiaries.

5.4 Financial Condition; No Material Adverse Change.

(a) The Borrower has heretofore delivered to the Lenders the following financial statements:

(i) the balance sheet and statement of operations, shareholders' equity and cash flow of the Borrower, as of and for the fiscal year ended December 31, 2016, audited and accompanied by an opinion of the Credit Parties' independent public accountants; and

(ii) the unaudited balance sheet and statement of operations, shareholders' equity and cash flows of the Borrower, as of and for the fiscal year-to-date period ended July 31, 2017, certified by a Designated Financial Officer that such financial statements fairly present, in all material respects, the financial condition of the Borrower as at such date and the results of the operations of the Borrower for the period ended on such date and that all such financial statements have been prepared in all material respects in accordance with GAAP applied consistently throughout the periods involved, except as disclosed on Schedule 5.4.

Except as disclosed on Schedule 5.4, the financial statements delivered pursuant to Section 5.4(a)(i) and (ii) present fairly, in all material respects, the financial position and results of operation and cash flow of the Borrower as of such respective dates and for such periods in accordance with GAAP applied consistently throughout the periods involved (except as expressly noted therein), subject to year-end audit adjustments and the absence of footnotes in the case of such unaudited statements.

(b) As of the Closing Date, since December 31, 2016, there has been no Material Adverse Effect.

(c) The Borrower does not have on the Closing Date any contingent liabilities, liabilities for material taxes, unusual forward or long-term commitments or unrealized or anticipated

losses from any unfavorable commitments in each case that are material and required to be set forth in financial statements or notes thereto in accordance with GAAP (except as indicated therein), except as referred to or reflected or provided for in the balance sheet as at the end of the fiscal year ended December 31, 2016, as provided for in Schedule 5.4, as otherwise permitted pursuant to this Agreement, or as referred to or reflected or provided for in the financial statements described in Section 5.4(a)(ii).

5.5 Properties.

(a) Each Credit Party and its Subsidiaries has good and marketable title to, or valid, subsisting and enforceable leasehold interests in, all its Property material to its business. All Equipment material to the business of the Credit Parties and their respective Subsidiaries is in good operating condition and repair, and all necessary replacements of and repairs thereto have be made so as to preserve and maintain the value and operating efficiency of such Equipment.

(b) Each Credit Party and each Subsidiary owns, or is licensed to use, all patents, trademarks, copyrights, trade secrets, know-how, and other intellectual property rights material to its business ("Proprietary Rights"), and to the knowledge of the Borrower, the use thereof by the Credit Parties and their respective Subsidiaries, and the conduct of their businesses, does not infringe upon the rights of any other Person, excepting any such infringement solely related to research and development activities of the Company that could not reasonably be expected, individually or in the aggregate, to result in a Material Adverse Effect. The Credit Parties and their respective Subsidiaries have not received any written communications or, to the knowledge of the Borrower, any oral communications within the prior two (2) years alleging that any Credit Party or any Subsidiary has violated or, by conducting their businesses, would violate any patents, trademarks, copyrights, trade secrets, know-how, or any other intellectual property rights of any other Person.

(c) As of the Closing Date, Schedule 5.5 identifies all Patents, Trademarks and Copyrights owned or exclusively licensed by any Credit Party or any Subsidiary, in each case, that have been duly registered in, filed and are pending in or issued by the United States Patent and Trademark Office or the United States Register of Copyrights and that are material to its business (collectively, the "Registered Proprietary Rights"). The Registered Proprietary Rights have been properly maintained and renewed in accordance with all applicable provisions of law and administrative regulations in the United States, as applicable, except to the extent that the failure to do so could not reasonably be expected, individually or in the aggregate, to result in a Material Adverse Effect. The Credit Parties and their respective Subsidiaries have taken commercially reasonable steps to protect their Registered Proprietary Rights and to maintain the confidentiality of all trade secrets included in the Proprietary Rights.

(d) As of the Closing Date, Schedule 5.5 contains a true, accurate and complete list of (i) all Real Property Assets, whether owned or leased, and (ii) all leases, subleases or assignments of leases (together with all amendments, modifications, supplements, renewals or extensions of any thereof) affecting each Leasehold Property, regardless of whether such Credit Party or such Subsidiary is the landlord or tenant (whether directly or as an assignee or successor in interest) under such lease, sublease or assignment. Except as specified in Schedule 5.5, each agreement listed in clause (ii) of the immediately preceding sentence is in full force and effect and the Credit Parties and their respective Subsidiaries have no knowledge of any default that has occurred and is continuing thereunder, and each such agreement constitutes the legal, valid and binding obligation of each applicable Credit Party and Subsidiary, enforceable against such Credit Party or such Subsidiary, as the case may be, in accordance with its terms, except as enforcement may be limited by bankruptcy, insolvency, reorganization, moratorium or similar laws relating to or limiting creditors' rights generally or by equitable principles.

5.6 Litigation and Environmental Matters; Government Investigations.

(a) There are no actions, suits or proceedings at law, in equity, in arbitration or by or before any Governmental Authority, in each case, pending against or, to the knowledge of the Credit Parties, threatened against, any Credit Party or any Subsidiary (i) that purport to affect or pertain to this Agreement or any other Loan Document or any of the transactions contemplated hereby or (ii) as to which there is a reasonable possibility of an adverse determination and that, if adversely determined, could reasonably be expected, individually or in the aggregate, to result in a Material Adverse Effect (other than, solely with respect to this clause (ii), the Government Investigations). Set forth in Schedule 5.6(a) is a correct and complete list of each action, suit and proceeding at law, in equity, in arbitration or by or before any Governmental Authority, in each case, pending against or, to the knowledge of the Credit Parties, threatened against, any Credit Party or any Subsidiary which, on an individual basis, could reasonably be expected to result in liability of the Credit Parties and their respective Subsidiaries in excess of $1,000,000.

(b) Except for the Disclosed Matters set forth in Schedule 5.6(b) and except with respect to any other matters that, individually or in the aggregate, could not reasonably be expected to result in a Material Adverse Effect, the Credit Parties and their respective Subsidiaries: (i) have not failed to comply with any Environmental Law or to obtain, maintain or comply with any permit, license or other approval required in connection with the operation of the businesses of the Credit Parties and their respective Subsidiaries to be in compliance with all applicable Environmental Laws; (ii) have not, to their knowledge, become subject to any Environmental Liability; (iii) have not received notice of any claim with respect to any Environmental Liability or any inquiry, allegation, notice or other communication from any Governmental Authority which is currently outstanding or pending concerning its compliance with any Environmental Law or (iv) have not caused to exist circumstances reasonably likely to result in, and do not know of any basis for, any Environmental Liability.

(c) Except as set forth in Schedule 5.6(c) (each matter set forth therein, a "Government Investigation"), neither any Credit Party nor any Subsidiary has received any written or verbal notice, or has otherwise become aware, that any Governmental Authority, including without limitation the United States Department of Justice, has commenced, intends or threatens to initiate any investigation into, or any action against, any Credit Party, any Subsidiary or any key executive of a Credit Party or Subsidiary, any action to enjoin any Credit Party or any Subsidiary thereof, its officers, directors, employees, shareholders or its agents and Affiliates, from conducting its business at any facility owned or used by it or for any material civil penalty, injunction, seizure or criminal action. The Credit Parties have disclosed to the Lenders all material information and all material correspondence received from any Governmental Authority relating to each Government Investigation.

5.7 Compliance with Laws and Orders. Except with respect to the Government Investigations, each Credit Party and each Subsidiary is in compliance with all laws, regulations, policies and orders of any Governmental Authority applicable to it or its property, except where the failure to do so, individually or in the aggregate, could not reasonably be expected to result in a Material Adverse Effect.

5.8 Investment and Holding Company Status. Neither any Credit Party nor any Subsidiary is (a) an "investment company" as defined in, or subject to regulation under, the Investment Company Act of 1940, as amended or (b) a "bank holding company" as defined in, or subject to regulation under, the Bank Holding Company Act of 1956, as amended.

5.9 Taxes. Each Credit Party and each Subsidiary has timely filed or caused to be filed all Tax returns and reports required to have been filed and has paid or caused to be paid all Taxes required to

have been paid by it, except (a) for Taxes that are being contested in good faith by appropriate proceedings and for which such Credit Party or such Subsidiary, as the case may be, has set aside on its books adequate reserves with respect thereto in accordance with GAAP, or (b) to the extent that the failure to do so could not reasonably be expected, individually or in the aggregate, to result in a Material Adverse Effect.

5.10 ERISA. Neither any Credit Party nor any Subsidiary has any Pension Plans. No ERISA Event has occurred or is reasonably expected to occur that, when taken together with all other such ERISA Events for which liability is reasonably expected to occur, could reasonably be expected to result in a Material Adverse Effect. Neither any Credit Party nor any Subsidiary has, as of the Closing Date, a present intention to terminate any Pension Plan with respect to which any Credit Party or any Subsidiary would incur a cost of more than $500,000 to terminate such Plan, including amounts required to be contributed to fund such Plan on Plan termination and all costs and expenses associated therewith, including, without limitation, attorneys' and actuaries' fees and expenses in connection with such termination and a reasonable estimate of expenses and settlement or judgment costs and attorneys' fees and expenses in connection with litigation related to such termination. To the extent that any Credit Party or any Subsidiary sponsors or maintains any program that pays or insures health or medical expenses on behalf of beneficiaries or recipients such programs comply with applicable Law in all material respects.

5.11 Disclosure. As of the Effective Time, the Credit Parties have disclosed to the Lenders all matters known to the Credit Parties that, individually or in the aggregate, could reasonably be expected to result in a Material Adverse Effect. The written information (other than projections, budgets and other forward looking information and information of a general economic or industry nature), reports, financial statements, exhibits and schedules furnished at or prior to the Effective Time in writing by or on behalf of the Credit Parties to the Lenders in connection with the negotiation, preparation or delivery of this Agreement and the other Loan Documents or included herein or therein or delivered pursuant hereto or thereto, at the Effective Time, when taken as a whole do not contain any untrue statement of material fact or omit to state any material fact necessary to make the statements herein or therein, in light of the circumstances under which they were made, not materially misleading. All written information furnished after the Effective Time by the Credit Parties to the Lenders in connection with this Agreement and the other Loan Documents and the transactions contemplated hereby and thereby when taken as a whole will be true, complete and accurate in every material respect, or (in the case of pro-forma information and projections) prepared in good faith based on reasonable assumptions, on the date as of which such information is certified. Schedule 5.6(c) accurately and fully describes all material information the Credit Parties have obtained regarding the Government Investigations and copies of all material documents received by the Credit Parties related to the Government Investigations have been delivered to the Lenders.

5.12 Capitalization. As of the Closing Date, the capital structure and ownership of the Credit Parties and their respective Subsidiaries are correctly described on Schedule 5.12. As of the Closing Date, the authorized, issued and outstanding capital stock or other equity interests, as applicable, of the Credit Parties and their respective Subsidiaries consists of the capital stock or other equity interests described on Schedule 5.12, all of which is duly and validly issued and outstanding, (and, in the case of any U.S. corporations) fully paid and nonassessable. Except (x) as set forth on Schedule 5.12, (y) as contemplated by the Series B Preferred Stock Purchase Agreement or (z) solely with respect to the following clause (a), as contemplated in the Co-Sale Agreement, the Investors' Rights Agreement or the Voting Agreement, as of the Closing Date, (a) there are no outstanding Equity Rights with respect to any Credit Party or any Subsidiary, and (b) there are no outstanding obligations of any Credit Party or any Subsidiary to repurchase, redeem, or otherwise acquire any shares of capital stock of or other equity interests in any Credit Party or any Subsidiary, nor are there any outstanding obligations of any Credit Party or any Subsidiary to make payments to any Person, such as "phantom stock" payments, where the

amount thereof is calculated with reference to the fair market value or equity value of any Credit Party or any Subsidiary.

5.13 Subsidiaries.

(a) Set forth on Schedule 5.13 is a complete and correct list of all Subsidiaries as of the Closing Date (with a designation of each Subsidiary that is an Excluded Subsidiary as of the Closing Date), together with, for each such Subsidiary, (i) the jurisdiction of organization of such Subsidiary, (ii) each Person holding ownership interests in such Subsidiary and (iii) the class of ownership interests held by each such Person and the number of shares of each class of ownership interest owned and the percentage of ownership of such Subsidiary represented by such ownership interests. Except as disclosed in Schedule 5.13, (x) each Credit Party and each Subsidiary owns, free and clear of Liens (other than Liens permitted hereunder), and has the unencumbered right to vote, all outstanding ownership interests in each Person shown to be held by it in Schedule 5.13, (y) all of the issued and outstanding capital stock or other equity interests of each such Person organized as a corporation is validly issued, fully paid and nonassessable and (z) there are no outstanding Equity Rights with respect to any such Person.

(b) Except as set forth on Schedule 8.8, as of the Closing Date neither any Credit Party not any Subsidiary is subject to any indenture, agreement, instrument or other arrangement containing any provision of the type described in Section 8.8 ("Restrictive Agreements"), other than any such provision the effect of which has been unconditionally, irrevocably and permanently waived.

5.14 Material Indebtedness, Liens and Agreements.

(a) Schedule 5.14 contains a complete and correct list, as of the Closing Date, of all Material Indebtedness of the Credit Parties and their respective Subsidiaries and any and all extensions of credit (or commitment for any extension of credit) to, or guarantees by, any Credit Party or any Subsidiary the aggregate principal or face amount of which equals or exceeds (or may equal or exceed) $250,000, and the aggregate principal or face amount outstanding or that may become outstanding with respect thereto is correctly described on Schedule 5.14.

(b) Schedule 5.14 contains a complete and correct list, as of the Closing Date, of each contract or arrangement to which any Credit Party or any Subsidiary is a party for which breach, nonperformance, cancellation or failure to renew could reasonably be expected to result in a Material Adverse Effect, other than purchase orders made in the ordinary course of business and subject to customary terms.

(c) To the extent requested by the Lenders, true and complete copies of each agreement listed on Schedule 5.14 have been delivered to the Lenders, together with all amendments, waivers and other modifications thereto. All such agreements are valid, subsisting, in full force and effect, and are currently binding upon each Credit Party and each Subsidiary that is a party thereto and, to the knowledge of the Credit Parties, binding upon the other parties thereto in accordance with their terms. The Credit Parties and their respective Subsidiaries are not in default under any such agreements, which default could reasonably be expected to result in a Material Adverse Effect.

5.15 Federal Reserve Regulations. Neither any Credit Party nor any Subsidiary is engaged principally or as one of its important activities in the business of extending credit for the purpose of purchasing or carrying "margin stock" (as defined in Regulation U of the Board). The making of the Loans hereunder, the use of the proceeds thereof as contemplated hereby, and the security arrangements contemplated by the Loan Documents, will not violate or be inconsistent with any of the provisions of Regulations T, U, or X of the Board.

5.16 Solvency. As of the Effective Time and after giving effect to the Term Loan hereunder, and the other transactions contemplated hereby:

(a) the aggregate value of all properties of the Credit Parties and their respective Subsidiaries (taken as a whole) at their present fair saleable value on a going concern basis, exceeds the amount of all the debts and liabilities (including contingent, subordinated, unmatured and unliquidated liabilities) of the Credit Parties and their respective Subsidiaries;

(b) the Credit Parties and their respective Subsidiaries will not, on a consolidated basis, have an unreasonably small capital with which to conduct their business operations as heretofore conducted; and

(c) the Credit Parties and their respective Subsidiaries will have, on a consolidated basis, sufficient cash flow to enable them to pay their debts as they mature.

5.17 Labor and Employment Matters.

(a) Except as set forth on Schedule 5.17 or with respect to which such representation, certification, recognition, obligation, contract, agreement, campaign, election, proceeding, strike, slowdown, work stoppage, practice, controversy or grievance, could not have, individually or in the aggregate, a Material Adverse Effect: (i) no employee of the Credit Parties and their respective Subsidiaries is represented by a labor union, no labor union has been certified or recognized as a representative of any such employee, and the Credit Parties and their respective Subsidiaries do not have any obligation under any collective bargaining agreement or other agreement with any labor union or any obligation to recognize or deal with any labor union, and there are no such contracts or other agreements pertaining to or which determine the terms or conditions of employment of any employee of the Credit Parties and their respective Subsidiaries; (ii) there are no pending or threatened representation campaigns, elections or proceedings; (iii) the Credit Parties and their respective Subsidiaries do not have knowledge of any strikes, slowdowns or work stoppages of any kind, or threats thereof; (iv) neither any Credit Party nor any Subsidiary has engaged in, admitted committing or been held to have committed any unfair labor practice; and (v) there are no controversies or grievances between any Credit Party or any Subsidiary and any of its employees or representatives thereof.

(b) Except as set forth on Schedule 5.17 or as could not reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect, the Credit Parties and their respective Subsidiaries have at all times since January 1, 2014 complied, and are in compliance with, all applicable laws, rules and regulations respecting employment, wages, hours, compensation, benefits, and payment and withholding of taxes in connection with employment.

(c) Except as set forth on Schedule 5.17 or as could not reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect, the Credit Parties and their respective Subsidiaries have at all times since January 1, 2014 complied with, and are in compliance with, all applicable laws, rules and regulations respecting occupational health and safety, including, without limitation, the Occupational Safety & Health Act of 1970, 29 U.S.C. Section 651 et seq. and the state analogies thereto, all as amended or superseded from time to time, and any common law doctrine relating to worker health and safety.

5.18 Deposit Accounts and Securities Accounts. Schedule 5.18 contains a complete and correct list of all banks and other financial institutions at which any Credit Party or any Subsidiary maintains Deposit Accounts and/or Securities Accounts as of the Closing Date, and such Schedule

correctly identifies the name and address of each depository, the name in which the account is held, a description of the purpose of the Deposit Account, and the complete account number.

5.19 Sanctions Concerns and Anti-Corruption Laws.

(a) Sanctions Concerns. No Credit Party, nor any Subsidiary, nor, to the knowledge of the Credit Parties and their respective Subsidiaries, any director, officer, employee, agent, affiliate or representative thereof, is a Person that is, or is owned or controlled by any Person that is (i) currently the subject or target of any Sanctions, (ii) included on OFAC's List of Specially Designated Nationals, HMT's Consolidated List of Financial Sanctions Targets and the Investment Ban List, or any similar list enforced by any other relevant sanctions authority or (iii) located, organized or resident in a Designated Jurisdiction.

(b) Anti-Corruption Laws. The Credit Parties and their respective Subsidiaries have conducted their business in compliance in all material respects with the United States Foreign Corrupt Practices Act of 1977, the UK Bribery Act 2010 and other similar anti-corruption legislation in other jurisdictions applicable to any Credit Party or any Subsidiary, and have instituted and maintained policies and procedures designed to promote and achieve compliance with such laws.

5.20 Patriot Act. The Credit Parties and their respective Subsidiaries are in compliance, in all material respects, with (a) the Trading with the Enemy Act, as amended, and each of the foreign assets control regulations of the United States Treasury Department (31 C.F.R., Subtitle B, Chapter V, as amended) and any other enabling legislation or executive order relating thereto (collectively, the "FAC Regulations"), and (b) the Uniting And Strengthening America By Providing Appropriate Tools Required To Intercept And Obstruct Terrorism (the "USA Patriot Act of 2001").

5.21 Healthcare Matters.

(a) Compliance with Health Care Laws. To its knowledge, each Credit Party is, and each Subsidiary is, and at all times since January 1, 2014, has been, in material compliance with all Health Care Laws and requirements of Third Party Payor Programs applicable to it. To the knowledge of each Credit Party, no circumstance exists or event has occurred which could reasonably be expected to result in a material violation by any Credit Party or any Subsidiary of any material Health Care Law or any requirement of any Third Party Payor Program. For the purpose of this Section 5.21, the term "knowledge" shall not be limited to actual knowledge of the information, and presumes that the Credit Party has performed reasonable due inquiry or diligence.

(b) Health Care Permits. Each Credit Party and each Subsidiary holds, and at all times since January 1, 2014, has held, all material Health Care Permits necessary for it to own, lease, sublease or operate its assets or to conduct its material business or operations as conducted at the applicable time (including to participate in and obtain reimbursement under all Third Party Payor Programs). All such Health Care Permits are, and at all times since January 1, 2014, have been, in full force and effect and there is and has been no material default under, material violation of, or other material noncompliance with the terms and conditions of any such Health Care Permit. To the knowledge of each Credit Party, no condition exists or event has occurred which, in itself or with the giving of notice or lapse of time or both, has resulted or could reasonably be expected to result in the suspension, revocation, termination, restriction, limitation, modification or non-renewal of any material Health Care Permit. No Governmental Authority has taken, or to the knowledge of any Credit Party intends to take, action to suspend, revoke, terminate, place on probation, restrict, limit, modify or not renew any material Health Care Permit of any Credit Party or any Subsidiary.

(c) Third Party Payor Authorizations. Each Credit Party and each Subsidiary holds, and at all times since January 1, 2014, has held, in full force and effect, all material Third Party Payor

Authorizations reasonably necessary to participate in and be reimbursed by all material Third Party Payor Programs in which such Credit Party or such Subsidiary participates. There is no investigation, audit, claim review, or other action pending, or to the knowledge of any Credit Party, threatened, which could reasonably be expected to result in a suspension, revocation, termination, restriction, limitation, modification or non-renewal of any Third Party Payor Authorization, result in any Credit Party's or any Subsidiary's exclusion from any Third Party Payor Program, or could reasonably be expected to have a Material Adverse Effect.

(d) Licensed Personnel. The Licensed Personnel (i) have complied at all times since January 1, 2014 when such Licensed Personnel have been performing services on behalf of any Credit Party or any Subsidiary, and currently are in compliance, in all material respects with all applicable Health Care Laws in the performance of such Licensed Personnel's duties for such Credit Party or such Subsidiary, and (ii) have held at all times since January 1, 2014 that such Persons have been Licensed Personnel performing services on behalf of any Credit Party or any Subsidiary, and currently hold (if still providing services on behalf of any Credit Party or any Subsidiary), all material professional licenses and other material Health Care Permits and all material Third Party Payor Authorizations required in the performance of such Licensed Personnel's duties for such Credit Party or such Subsidiary, and, each such Health Care Permit and Third Party Payor Authorization is in full force and effect and, to the knowledge of each Credit Party, no suspension, revocation, termination, impairment, modification or non-renewal of any such Permit or Third Party Payor Authorization is pending or threatened.

(e) Accreditation. Each Credit Party and each Subsidiary has obtained and maintains accreditation in good standing and without limitation or impairment by all applicable accrediting organizations, to the extent customary in the industry in which it is engaged or required by law (including any foreign law or equivalent regulation), except where the failure to have or maintain such accreditation in good standing or imposition of limitation or impairment could not reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect.

(f) Proceedings and Audits. Except as set forth on Schedule 5.21(f), there are no pending (or, to the knowledge of any Credit Party, threatened) actions, suits, investigations, or proceedings against or affecting any Credit Party or any Subsidiary or, to the knowledge of any Credit Party, any Licensed Personnel, relating to any actual or alleged material non-compliance with any Health Care Law or requirement of any Third Party Payor Program. Schedule 5.21(f) sets forth any pending (or, to the knowledge of any Credit Party, threatened) dispute between any Third Party Payor Program and any Credit Party or any Subsidiary which may be reasonably expected to result in any Credit Party or any Subsidiary having responsibility to any Third Party Payor Program for any overpayment, liability, fines, penalties, or damages in excess of $1,000,000. To the knowledge of any Credit Party, there currently exist no material restrictions, deficiencies, required plans of correction or other such remedial measures with respect to any Health Care Permit of a Credit Party or a Subsidiary, or a Credit Party's or a Subsidiary's participation in any Third Party Payor Program. Without limiting the foregoing, to the knowledge of any Credit Party, no validation review, program integrity review, audit or other investigation related to any Credit Party or any Subsidiary or their respective operations, or the consummation of the transactions contemplated by the Loan Documents or related to the Collateral (i) has been conducted by or on behalf of any Governmental Authority since January 1, 2014, or (ii) is scheduled, pending or, to the knowledge of any Credit Party, threatened.

(g) Overpayments. Except as could not reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect, during the three (3) year period prior to the Closing Date, neither any Credit Party nor any Subsidiary has retained any payment received from, or failed to refund any amount due to, any Third Party Payor in violation in any respect of any Health Care Law or contract, after having identified any such overpayment or refunds due.

(h) Material Statements. To the knowledge of each Credit Party, neither any Credit Party nor any Subsidiary, nor any officer, affiliate, employee or agent of any Credit Party (in such capacity) or any Subsidiary (in such capacity), has made an untrue statement of a material fact or fraudulent statement to any Governmental Authority, failed to disclose a material fact that must be disclosed to any Governmental Authority, or committed an act, made a statement or failed to make a statement that, at the time such statement, disclosure or failure to disclose occurred, could reasonably be expected to constitute a material violation of any Health Care Law.

(i) Prohibited Transactions. To the knowledge of each Credit Party, neither any Credit Party nor any Subsidiary, nor any officer, affiliate, employee or agent of any Credit Party or any Subsidiary, directly or indirectly, has (i) offered or paid or solicited or received any material remuneration, in cash or in kind, or made any financial arrangements, in violation of any Health Care Law; (ii) given or agreed to give, or is aware that there has been made or that there is any agreement to make, any gift or gratuitous payment of any kind, nature or description (whether in money, property or services) in material violation of any Health Care Law; (iii) made or agreed to make, or is aware that there has been made or that there is any agreement to make, any material contribution, payment or gift of funds or property to, or for the private use of, any governmental official, employee or agent where either the contribution, payment or gift or the purpose of such contribution, payment or gift is or was illegal under the laws of any Governmental Authority having jurisdiction over such payment, contribution or gift; (iv) established or maintained any material unrecorded fund or asset for any purpose or made any materially misleading, false or artificial entries on any of its books or records for any reason; or (v) made, or agreed to make, or is aware that there has been made or that there is any agreement to make, any payment to any person with the intention or understanding that any part of such payment would be in violation of any Health Care Law or used or was given for any purpose other than that described in the documents supporting such payment. To the knowledge of each Credit Party, since January 1, 2014, no person has filed or has threatened to file against any Credit Party or their Affiliates an action under any federal or state whistleblower statute, including under the False Claims Act (31 U.S.C. § 3729 et seq.).

(j) Exclusion. Neither any Credit Party nor any Subsidiary, nor any owner, officer, director, partner, agent, managing employee or Person with a "direct or indirect ownership interest" (as that phrase is defined in 42 C.F.R. § 420.201) in any Credit Party or any Subsidiary, nor, to the knowledge of the Credit Parties, any Licensed Personnel of any Credit Party or any Subsidiary, has been (or, has been threatened to be) (i) excluded from any Third Party Payor Program pursuant to 42 U.S.C. § 1320a-7 and related regulations; (ii) "suspended" or "debarred" from selling products to the U.S. government or its agencies pursuant to the Federal Acquisition Regulation, relating to debarment and suspension applicable to federal government agencies generally (42 C.F.R. Subpart 9.4), or other applicable laws or regulations; (iii) debarred, disqualified, suspended or excluded from participation in any Third Party Payor Program or is listed on the General Services Administration list of excluded parties, nor, to the knowledge of the Credit Parties, is any such debarment, disqualification, suspension or exclusion threatened or pending; or (iv) made a party to any other action by any Governmental Authority that may prohibit it from selling products or providing services to any governmental purchaser or other purchaser pursuant to any federal, state or local laws or regulations.

(k) Corporate Integrity Agreement. Neither any Credit Party nor any Subsidiary, nor any owner, officer, director, partner, agent, managing employee or Person with a "direct or indirect ownership interest" (as that phrase is defined in 42 C.F.R. §1001.1001) in any Credit Party or any Subsidiary is a party to, or bound by, any order, individual integrity agreement, corporate integrity agreement, corporate compliance agreement, deferred prosecution agreement, or other formal or informal agreement with any Governmental Authority concerning compliance with Health Care Laws.

(l) Reimbursement Coding. To the extent any Credit Party or any Subsidiary provides to its customers or any other Persons reimbursement coding or billing advice, all such advice is and, as applicable, has been, materially complete and accurate, and materially conforms and, as applicable, has materially conformed, to the applicable American Medical Association's Current Procedural Terminology (CPT), the International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) or its successor, as applicable, and other applicable coding systems, except where such advice could not reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect.

5.22 Limited Offering of Warrants. Assuming the accuracy of the representations and warranties of the purchaser in the Series B Preferred Stock Purchase Agreement, the offer and sale of the Warrants are not required to be registered pursuant to the provisions of Section 5 of the Securities Act or the registration or qualification provisions of the blue sky laws of any state. Neither the Borrower nor any agent on the Borrower's behalf, has solicited or will solicit any offers to sell all or any part of the Warrants to any Person so as to bring the sale of the Warrants by the Borrower within the registration provisions of the Securities Act or any state securities laws.

5.23 Registration Rights. Except as described in the Investors' Rights Agreement, the Borrower is under no requirement to register under the Securities Act or the Trust Indenture Act of 1939, as amended, any of its presently outstanding securities or any of its securities that may subsequently be issued.

5.24 Perfection Matters. Set forth on Schedule 5.24 is the taxpayer identification number and organizational identification number of each Credit Party as of the Closing Date. The exact legal name, state of organization and address of the chief executive office of (a) the Borrower is (i) as set forth on the signature pages hereto or (ii) as may be otherwise disclosed by the Credit Parties in accordance with Section 8.15 and/or Section 4.2(b) and (b) each Guarantor is (i) as set forth on the signature pages hereto, (ii) as set forth on the signature pages to the supplement or other documentation pursuant to which such Guarantor became a party hereto or (iii) as may be otherwise disclosed by the Credit Parties in accordance with Section 8.15 and/or Section 4.2(b). Except as set forth on Schedule 5.24, no Credit Party has during the five years preceding the Closing Date (i) changed its legal name, (ii) changed its state of organization, or (iii) been party to a merger, consolidation or other change in structure.

ARTICLE 6
CONDITIONS PRECEDENT

6.1 Conditions; Term Loan and Purchase of Warrants. The obligations of the Lenders to make the Term Loan and to purchase the Warrants shall not become effective until the date on which each of the following conditions is satisfied (or waived in accordance with Section 10.2):

(a) Investment Documents. The Lenders shall have received executed counterparts of this Agreement and the other Investment Documents, each properly executed by a Designated Financial Officer of the signing Credit Party and each other party to such Investment Documents, including, without limitation, the Warrants duly executed and issued by the Borrower, in each case in form and substance satisfactory to the Lenders.

(b) Organizational Structure. The corporate organizational structure, capitalization and ownership of the Credit Parties and their respective Subsidiaries, shall be as set forth on Schedules 5.12 and 5.13 annexed hereto.

(c) Existence and Good Standing. The Lenders shall have received such documents and certificates as the Lenders may reasonably request relating to the organization, existence and good standing of each Credit Party and the authorization of the transactions contemplated hereby, all in form and substance reasonably satisfactory to the Lenders.

(d) Security Interests in Personal and Mixed Property. The Lenders shall have received evidence reasonably satisfactory to them that the Credit Parties shall have taken or caused to be taken all such actions, executed and delivered or caused to be executed and delivered all such agreements, documents and instruments and made or caused to be made all such filings and recordings (other than filings or recordings to be made by the Collateral Agent or the Lenders on or after the Closing Date) that may be necessary or are otherwise reasonably requested by the Lenders in order to create in favor of the Lenders, valid and (upon such filing and recording) perfected First Priority security interests in the entire personal and mixed property Collateral.

(e) [Reserved].

(f) Evidence of Insurance. The Lenders shall have received certificates from the Credit Parties' insurance brokers that all insurance required to be maintained pursuant to Section 7.5 is in full force and effect and that the Collateral Agent, for the benefit of the Lenders, has been named as additional insured or loss payee thereunder to the extent required under Section 7.5.

(g) Necessary Governmental Permits, Licenses and Authorizations and Consents, Etc. The Credit Parties and their respective Subsidiaries shall have received all governmental, shareholder and third party permits, licenses, authorizations, consents and approvals necessary in connection with the transactions contemplated by this Agreement and the other Investment Documents and all applicable waiting periods shall have expired without any action being taken by any Person that could reasonably be expected to restrain, prevent or impose any material adverse conditions on any Credit Party or any Subsidiary or such transactions or that could seek to threaten any of the foregoing, and no law or regulation shall be applicable which could reasonably be expected to have such effect.

(h) Existing Debt; Liens. The Lenders shall have received (if applicable) evidence that all principal, interest, and other amounts owing in respect of all Existing Debt of the Credit Parties and their respective Subsidiaries (other than Indebtedness permitted to remain outstanding in accordance with Section 8.1) will be repaid in full as of the Closing Date. The Lenders shall have received evidence that as of the Closing Date, the Property of the Credit Parties and their respective Subsidiaries is not subject to any Liens (other than Liens permitted to remain outstanding in accordance with Section 8.2).

(i) Financial Statements. The Lenders shall have received the certified financial statements referred to in Section 5.4.

(j) Financial Officer Certificate. The Lenders shall have received a certificate, dated the Closing Date and signed by a Designated Financial Officer, confirming compliance with the conditions set forth in Section 6.1(g), Section 6.1(m) and Section 6.2 at the Effective Time.

(k) Opinion of Counsel to Credit Parties. The Lenders shall have received favorable written opinions (addressed to the Lenders and dated the Closing Date) of Gibson, Dunn & Crutcher LLP, special counsel to the Credit Parties, covering such matters relating to the Credit Parties, this Agreement, the other Investment Documents or the transactions contemplated hereby as the Lenders shall reasonably request.

(l) Controlled Accounts. The Credit Parties shall have entered into Control Agreements with respect to the Controlled Accounts that have been established and are being maintained as of the Closing Date.

(m) Carmenta. Prior to or substantially concurrently with the Effective Time, the Borrower shall have (i) caused Carmenta to be dissolved and (ii) as a result thereof, by operation of law, all tangible and intangible property and assets of Carmenta to be assigned, transferred or otherwise disposed of to the Borrower or any other Credit Party, after payment of or provisions for all claims and obligations with respect thereto.

(n) Amendment to Comerica Real Estate Loan Documents. The Lenders shall have received such documents as the Lenders may reasonably request evidencing the amendment of all applicable Comerica Real Estate Loan Documents to permit the incurrence of the Obligations and the creation of Liens pursuant to the Loan Documents, in each case in form and substance reasonably satisfactory to the Lenders.

(o) Equity Matters. All transactions contemplated by the Series B Preferred Stock Purchase Agreement shall have been consummated, including, without limitation, the issuance by the Borrower to AOF III Co-Invest of 14,164,306 shares of Series B Preferred Stock, in accordance with the Series B Preferred Stock Purchase Agreement and Stylli shall have executed all necessary documentation to exchange all remaining shares of Series A-2 Preferred Stock into common stock of the Borrower (including the issuance by the Borrower of such common stock).

(p) Advance Request; Funding Direction Letter. The Lenders shall have received (i) a completed and executed Advance Request at least two (2) Business Days prior to the Effective Time and (ii) a letter of direction containing funds flow information, with respect to the proceeds of the Term Loan on the Closing Date.

(q) Fees and Expenses. The Lenders shall have received all fees and other amounts due and payable hereunder to the Lenders and/or Moore & Van Allen PLLC at or prior to the Effective Time, including, to the extent invoiced not fewer than two (2) Business Days prior to the Closing Date, reimbursement or payment of all out-of-pocket expenses required to be reimbursed or paid by the Borrower hereunder (*provided*, *that*, it is understood and agreed the Borrower shall only be required to reimburse or pay up to $100,000 of the reasonable and documented fees, costs and expenses of Moore & Van Allen PLLC incurred prior to the Effective Time).

6.2 Conditions; Term Loan. The obligation of the Lenders to make the Term Loan is subject to the additional conditions precedent that, both before and after giving effect to the Term Loan:

(a) Representations and Warranties. The representations and warranties of the Credit Parties and each Subsidiary set forth in this Agreement and the other Investment Documents shall be true and correct in all material respects (except to the extent that such representation and warranty is qualified by materiality or reference to Material Adverse Effect, in which case such representation and warranty shall be true and correct in all respects) with the same effect as if then made (except to the extent stated to relate to a specific earlier date, in which case such representations and warranties shall be true and correct in all material respects as of such earlier date (except to the extent that such representation and warranty is qualified by materiality or reference to Material Adverse Effect, in which case such representation and warranty shall be true and correct in all respects as of such earlier date)).

(b) No Default. No Event of Default or Default shall have then occurred and be continuing.

(c) No Material Adverse Effect. Since December 31, 2016, there shall have occurred no Material Adverse Effect.

The request by the Borrower for the making of the Term Loan shall be deemed to constitute a representation and warranty by the Borrower that the conditions precedent set forth in this Section 6.2 will be satisfied at the time of the making of the Term Loan.

ARTICLE 7
AFFIRMATIVE COVENANTS

Until all Obligations have been paid in full each Credit Party covenants and agrees with the Lenders that:

7.1 Financial Statements and Other Information. The Credit Parties will furnish to the Lenders:

(a) as soon as available and in any event within 120 days after the end of each fiscal year of the Credit Parties:

(i) consolidated statements of operations, shareholders' equity and cash flows of the Credit Parties and their respective Subsidiaries for such fiscal year and the related consolidated balance sheets of the Credit Parties and their respective Subsidiaries as at the end of such fiscal year, setting forth in each case in comparative form the corresponding consolidated figures for the preceding fiscal year, and

(ii) an opinion of independent certified public accountants of recognized national standing (without a "going concern" or like qualification or exception and without any qualification or exception as to the scope of such audit) stating that the consolidated financial statements referred to in the preceding clause (i) fairly present in all material respects the consolidated financial condition and results of operations of the Credit Parties and their respective Subsidiaries as at the end of, and for, such fiscal year in accordance with GAAP.

(b) as soon as available and in any event within 45 days after the end of each fiscal quarter of the Credit Parties:

(i) consolidated statements of operations and cash flows of the Credit Parties and their respective Subsidiaries for such fiscal quarter and for the period from the beginning of the respective fiscal year to the end of such quarter, and the related consolidated balance sheets of the Credit Parties and their respective Subsidiaries as at the end of such period, setting forth in each case in comparative form the corresponding consolidated figures for the corresponding period in the preceding fiscal year, and the corresponding figures for the forecasts most recently delivered to the Lenders for such period, and

(ii) a certificate of a Designated Financial Officer, which certificate shall state that said consolidated financial statements referred to in the preceding clause (i) fairly present in all material respects the consolidated financial condition and results of operations of the Credit Parties and their respective Subsidiaries, in each case in accordance with GAAP, consistently applied, as at the end of, and for, such period (subject to normal year-end audit adjustments and the omission of footnotes);

(c) as soon as available and in any event within (i) 45 days after the end of each fiscal quarter, a Compliance Certificate duly executed by a Designated Financial Officer with respect to the quarterly financial statements delivered pursuant to Section 7.1(b) above, and (ii) 120 days after the end of each fiscal year, a Compliance Certificate duly executed by a Designated Financial Officer with respect to the annual financial statements delivered pursuant to Section 7.1(a) above; and

(d) as soon as available and in any event within 45 days after the beginning of each fiscal year of the Credit Parties, statements of forecasted consolidated income and cash flows for the Credit Parties and their respective Subsidiaries for each fiscal month in such fiscal year and a forecasted consolidated balance sheet of the Credit Parties and their respective Subsidiaries as of the last day of each fiscal month in such fiscal year together with supporting assumptions which were reasonable when made, all prepared in good faith in reasonable detail and consistent with the Credit Parties' past practices in preparing projections and otherwise reasonably satisfactory in scope to the Lenders;

(e) upon written request of the Collateral Agent, within 45 days after the end of each fiscal quarter, a written report providing in reasonable detail a summary of the recent material developments over the last quarter in connection with each Government Investigation and the then current status of each Government Investigation; provided that the Lenders may in their discretion request an oral report instead of a written report; *provided*, *that*, the Borrower shall not be obligated to provide information to the Collateral Agent pursuant to this Section 7.1(e) to the extent such information has previously been provided to the Athyrium Director in his capacity as such;

(f) promptly, and in any event within 5 Business Days after receipt thereof by any Credit Party or any Subsidiary, copies of the following, in each case with respect to any Government Investigation, to the extent such items are material (as determined in good faith by the Borrower) and are not otherwise subject to a confidentiality obligation or any law, rule or regulation prohibiting disclosure thereof: (i) any subpoena, civil investigative demand or other similar request for documentation, settlement demand or other written request that is received by (A) any Credit Party or any Subsidiary or (B) any other Person and about which any Credit Party, any Subsidiary or any officer thereof has actual knowledge; (ii) any notice or other substantive written communication from, by or with any Governmental Authority, including without limitation the United States Department of Justice and specifically including any written communications of proposals for resolution of any Government Investigation; and (iii) any presentation made by any Credit Party or Subsidiary to any Governmental Authority regarding a Government Investigation or by any Governmental Authority to any Credit Party or Subsidiary regarding a Government Investigation, including without limitation presentations to or by the United States Department of Justice;

(g) promptly upon receipt thereof, copies of all management letters and accountants' letters received by the Credit Parties and their respective Subsidiaries; and

(h) promptly following any request therefor, such other information regarding the operations, business affairs and financial condition of the Credit Parties and their respective Subsidiaries, or compliance with the terms of this Agreement and the other Loan Documents, as the Lenders may reasonably request.

7.2 Notices of Material Events. The Credit Parties will furnish to the Lenders prompt written notice of the following:

(a) the occurrence of any Default;

(b) the filing or commencement of any action, suit or proceeding at law, in equity, in arbitration or by or before any Governmental Authority against any Credit Party or Affiliate thereof that could reasonably be expected to result in a Material Adverse Effect, including, without limitation, any such action, suit or proceeding that alleges potential or actual violations of any Health Care Law by a Credit Party or any Subsidiary or any of their respective Licensed Personnel;

(c) the occurrence of any ERISA Event related to the Plan of any Credit Party or any Subsidiary or knowledge after due inquiry of any ERISA Event related to a Plan of any other ERISA Affiliate that, alone or together with any other ERISA Events that have occurred, could reasonably be expected to result in liability of the Credit Parties and their respective Subsidiaries in an aggregate amount exceeding $1,000,000;

(d) (i) the voluntary disclosure by any Credit Party or any Subsidiary to any Governmental Authority or any Third Party Payor Program (including to any intermediary, carrier or contractor of such Third Party Payor Program), of an actual or potential overpayment matter involving the submission of claims to a Third Party Payor that could reasonably result in damages (including an assessment or civil monetary penalty) or a settlement amount in excess of $2,000,000; (ii) that any Credit Party or any Subsidiary, an owner, officer, manager, employee or Person with a "direct or indirect ownership interest" (as that phrase is defined in 42 C.F.R. §420.201) in any Credit Party or any Subsidiary: (A) has had a civil monetary penalty assessed against him or her pursuant to 42 U.S.C. §1320a-7a or is the subject of a proceeding seeking to assess such penalty; (B) has been excluded from participation in a Federal Health Care Program (as that term is defined in 42 U.S.C. §1320a-7b) or is the subject of a proceeding seeking to assess such penalty; (C) has been convicted (as that term is defined in 42 C.F.R. §1001.2) of any of those offenses described in 42 U.S.C. §1320a-7b or 18 U.S.C. §§669, 1035, 1347, 1518 or is the subject of a proceeding seeking to assess such penalty; or (D) has been involved or named in a complaint filed pursuant to the False Claims Act under 31 U.S.C. §3729 et seq. by any individual or by the United States Department of Justice; (iii) receipt by any Credit Party or any Subsidiary of any notice or written communication from an accrediting organization that such Person is (A) subject to or is required to file a plan of correction with respect to any accreditation survey where the failure to file such plan could lead to loss of accreditation, or (B) in danger of losing its accreditation due to a failure to comply with a plan of correction; (iv) any health care survey, report or other communication related to licensure, accreditation, or participation in any Third Party Payor Program that includes any statement of material deficiencies pertaining to any Credit Party or any Subsidiary; (v) any material and adverse validation review, material and adverse program integrity review or material reimbursement audits related to any Credit Party or any Subsidiary in connection with any Third Party Payor Program; (vi) any claim to recover any alleged overpayments with respect to any receivables that could result in damages (including an assessment or civil monetary penalty) or a settlement amount in excess of $2,000,000; (vii) notice of any material reduction in the level of reimbursement expected to be received with respect to receivables; (viii) any material licensure violations or fraudulent acts or omissions involving any Credit Party or any Subsidiary, or, to the knowledge of any Credit Party, any Licensed Personnel; (ix) the pending or threatened (in writing) imposition of any material fine or penalty by any Governmental Authority under any Health Care Law against any Credit Party, or, to the knowledge of any Credit Party, any Licensed Personnel; (x) notice of any Credit Party's or any Subsidiary's fees in excess of $2,000,000 being contested or disputed; (xi) any pending revocation, suspension, termination, probation, restriction, limitation, denial, or non-renewal with respect to any material Health Care Permit or material Third Party Payor Authorization, including without limitation (A) any correspondence from any Governmental Authority which gives notice of, or (B) the occurrence of, any event which in the case of either (A) or (B) could reasonably be expected to result in any Credit Party, any Subsidiary or key executive of a Credit Party or Subsidiary becoming excluded, suspended or debarred from participation, or becoming otherwise ineligible to participate, in any Third Party Payor Program with a Government Payor; (xii) any non-routine and material inspection of any facility of a

Credit Party or a Subsidiary by any Governmental Authority; (xiii) notice of the occurrence of any reportable event as defined in any corporate integrity agreement, corporate compliance agreement or deferred prosecution agreement pursuant to which any Credit Party or any Subsidiary has to make a submission to any Governmental Authority or other Person under the terms of such agreement, if any; and (xiv) without duplication, any failure of any Credit Party or any Subsidiary to comply with the covenants and conditions of Section 7.8; and

(e) any other development that results in, or could reasonably be expected to result in, a Material Adverse Effect.

Each notice delivered under this Section 7.2 shall be accompanied by a statement of a Designated Financial Officer setting forth the details of the event or development requiring such notice and any action taken or proposed to be taken with respect thereto.

7.3 Existence; Conduct of Business. Each Credit Party shall, and shall cause each Subsidiary to, do or cause to be done all things necessary to preserve, renew and keep in full force and effect its legal existence and good standing under the laws of the jurisdiction of its organization (except in a transaction permitted by Section 8.4) and the rights, licenses, permits, privileges and franchises material to the conduct of its business; *provided*, *that*, the foregoing shall not prohibit any merger, consolidation, liquidation, dissolution or any discontinuance or sale of such business permitted under Section 8.4.

7.4 Payment of Obligations. Each Credit Party shall, and shall cause each Subsidiary to, pay its obligations, including Tax liabilities, that, if not paid, could reasonably be expected to result in a Material Adverse Effect, before the same shall become delinquent or in default, except where the validity or amount thereof is being contested in good faith by appropriate proceedings and such Credit Party or such Subsidiary, as the case may be, has set aside on its books adequate reserves with respect thereto in accordance with GAAP.

7.5 Maintenance of Properties; Insurance. Each Credit Party shall, and shall cause each Subsidiary to, (a) keep and maintain all property material to the conduct of its business in good working order and condition, ordinary wear and tear excepted, and (b) maintain insurance, with financially sound and reputable insurance companies, as may be required by law and such other insurance in such amounts, on such terms and against such risks as are customarily maintained by companies engaged in the same or similar businesses operating in the same or similar locations, including, without limitation, business interruption and product liability insurance. Without limiting the generality of the foregoing, the Credit Parties will, and will cause each Subsidiary to, maintain or cause to be maintained replacement value casualty insurance on the Collateral under such policies of insurance, in each case with such insurance companies, in such amounts, with such deductibles, and covering such terms and risks as are at all times reasonably satisfactory to the Lenders in their commercially reasonable judgment. All general liability and other liability policies with respect to the Credit Parties and their respective Subsidiaries shall name the Collateral Agent, for the benefit of the Lenders, as an additional insured thereunder as its interests may appear, and all business interruption and casualty insurance policies shall contain a loss payable clause or endorsement, reasonably satisfactory in form and substance to the Lenders that names the Collateral Agent, for the benefit of the Lenders, as the loss payee thereunder. All policies of insurance shall provide for at least thirty (30) days' prior written notice to the Collateral Agent of any cancellation of such policy (or ten (10) days' prior written notice in the case of the failure to pay any premiums thereunder).

7.6 Books and Records; Inspection Rights. Each Credit Party shall, and shall cause each Subsidiary to, keep proper books of record and account in which entries are made of all dealings and transactions in relation to its business and activities which fairly record such transactions and activities.

Upon the Collateral Agent's reasonable request, each Credit Party will, and will cause each Subsidiary to, give the Collateral Agent notice from time to time of each office where books of record and account pertaining to all intangible items of Collateral are kept. Each Credit Party shall, and shall cause each Subsidiary to, permit any representatives designated by the Lenders to visit and inspect its properties, to examine and make extracts from its books and records, and to discuss its affairs, finances and condition with its officers and independent accountants as frequently as the Lenders deem appropriate (but in any event, not more than once per fiscal quarter so long as no Event of Default has occurred and is continuing); *provided*, *that*, so long as no Default has occurred and is continuing all such visits shall be on reasonable prior notice, at reasonable times during regular business hours of such Credit Party or such Subsidiary; *provided*, *further*, *that*, after the occurrence and during the continuance of any Default, the Lenders may visit at any reasonable times. The Borrower shall reimburse the Lenders for all reasonable and documented examination and inspections costs, internal costs at the customary rate charged by the Lenders, plus all reasonable and documented out-of-pocket expenses incurred in connection with such inspections; *provided*, *that*, so long as no Event of Default has occurred and is continuing, Borrower shall only be required to reimburse the Lenders for inspection costs in connection with one such visit and inspection per fiscal year.

7.7 Fiscal Year. The Credit Parties and their respective Subsidiaries shall maintain their current fiscal year.

7.8 Compliance with Laws.

(a) Each Credit Party shall, and shall cause each Subsidiary to, comply in all material respects with (i) all permits, licenses and authorizations, including, without limitation, environmental permits, licenses and authorizations, issued by a Governmental Authority; (ii) all laws, rules, regulations and orders including, without limitation, the Trading with the Enemy Act, the FAC Regulations and the USA Patriot Act of 2001, of any Governmental Authority; and (iii) all contractual obligations, in each case applicable to it or its property, except where the failure to do so, individually or in the aggregate, could not reasonably be expected to result in a Material Adverse Effect.

(b) Without limiting or qualifying Section 7.8(a), or any other provision of this Agreement, each Credit Party will, and will cause each Subsidiary to, comply in all material respects with all applicable Health Care Laws relating to the operation of such Person's business.

(c) Each Credit Party shall, and shall cause each Subsidiary to, (i) obtain, maintain and preserve and take all necessary action to timely renew, all material Health Care Permits (including, as applicable, Health Care Permits necessary for it to be eligible to receive payment and compensation from and to participate in Medicare, Medicaid or any other Third Party Payor Programs) that are necessary in the conduct of its business; (ii) be and remain in material compliance with all requirements for participation in, and for licensure required to provide the goods or services that are reimbursable under, Medicare, Medicaid and any other Third Party Payor Programs; (iii) cause all Licensed Personnel to comply in all material respects with all applicable Health Care Laws in the performance of their duties to or for any Credit Party or any Subsidiary, and to maintain in full force and effect all material professional licenses and other Health Care Permits required to perform such duties; and (iv) keep and maintain in all material respects all records required to be maintained by any Governmental Authority or otherwise under any Health Care Law, in each case.

(d) Each Credit Party shall, and shall cause each Subsidiary to, maintain a corporate and health care regulatory compliance program ("CCP") which addresses the requirements of Health Care Laws, including Health Information Privacy Laws and that includes at least the following components: (i) standards of conduct and procedures that describe compliance policies regarding laws with an

emphasis on prevention of fraud and abuse; (ii) a specific officer within high-level personnel identified as having overall responsibility for compliance with such standards and procedures; (iii) training and education programs which effectively communicate the compliance standards and procedures to employees and agents, including fraud and abuse laws and illegal billing practices; (iv) auditing and monitoring systems and reasonable steps for achieving compliance with such standards and procedures, including publicizing a report system to allow employees and other agents to anonymously report criminal or suspect conduct and potential compliance problems; (v) disciplinary guidelines and consistent enforcement of compliance policies, including discipline of individuals responsible for the failure to detect violations of the CCP; and (vi) mechanisms to immediately respond to detected violations of the CCP. The Credit Parties shall, and shall cause each Subsidiary to, modify such CCPs from time to time, as may be necessary to ensure continuing compliance in all material respects with all applicable Health Care Laws. The Credit Parties shall, and shall cause each Subsidiary to, upon the Lenders' reasonable request, provide copies of the CCP to the Lenders, together with any other documentation relating to the administration thereof and compliance by the applicable Credit Party or Subsidiary therewith.

(e) Each Credit Party shall, and shall cause each Subsidiary to, conduct its business in compliance in all material respects with the United States Foreign Corrupt Practices Act of 1977, the UK Bribery Act 2010 and other similar anti-corruption legislation in other jurisdictions applicable to any Credit Party or any Subsidiary.

7.9 Use of Proceeds. The proceeds of the Loans will be used only for (a) the repayment of Existing Debt of the Credit Parties and their respective Subsidiaries (other than Existing Debt of the type described in clause (b) of the definition thereof), (b) the payment of fees and expenses incurred in connection with the transactions contemplated by this Agreement, (c) the repurchase of shares of capital stock of the Borrower, to the extent permitted by Section 8.6, and (d) general corporate and working capital purposes of the Credit Parties and their respective Subsidiaries, including, without limitation, funding research and development; *provided*, *that*, in no event shall the proceeds of the Loans be used in contravention of any Law or any Loan Document.

7.10 Certain Obligations Respecting Pledges of Capital Stock and Subsidiaries.

(a) The Credit Parties shall cause, at all times, the Collateral Agent, for the benefit of the Lenders, to be granted a first priority perfected Lien (subject only to inchoate Permitted Liens) on one hundred percent (100%) of the outstanding capital stock or other equity interests of the Credit Parties (other than, for the avoidance of doubt, the Borrower) and their respective Subsidiaries; *provided*, *that*, with respect to any Foreign Subsidiary or FSHCO, such pledge shall be limited to (x) 65% of the voting capital stock or other voting equity interests of such Foreign Subsidiary or FSHCO and (y) 100% of the non-voting capital stock or other non-voting equity interests of such Foreign Subsidiary or FSHCO.

(b) The Credit Parties shall, upon the formation or acquisition (it being understood that any Excluded Subsidiary ceasing to be an Excluded Subsidiary but remaining a Subsidiary shall be deemed to be the acquisition of a Subsidiary for purposes hereof) of any direct or indirect Wholly Owned Domestic Subsidiary (other than an Excluded Subsidiary) after the Closing Date, (i) cause each such Wholly Owned Domestic Subsidiary to become a Credit Party hereunder by executing a supplement hereto in form and substance reasonably satisfactory to the Lenders, (ii) pledge to the Collateral Agent, for the benefit of the Lenders, all the capital stock or other equity interests of each such Wholly Owned Domestic Subsidiary directly held by such Credit Party, and (iii) take, or cause each such Wholly Owned Domestic Subsidiary to take, such additional actions as are reasonably requested by the Lenders to grant a Lien in favor of the Collateral Agent, for the benefit of the Lenders, on all assets of such Wholly Owned Domestic Subsidiary (other than Intellectual Property and Excluded Collateral) consistent with the terms of this Agreement.

7.11 ERISA. Except where a failure to comply with any of the following, individually or in the aggregate, could not reasonably be expected to result in a Material Adverse Effect, (a) the Credit Parties will, and will cause each Subsidiary to, maintain, and cause each ERISA Affiliate to maintain, each Plan in compliance with all applicable requirements of ERISA and of the Code and with all applicable rulings and regulations issued under the provisions of ERISA and of the Code and (b) the Credit Parties will not, and will not permit any Subsidiary to, and, to the extent authorized, will not permit any of the ERISA Affiliates to (i) engage in any transaction with respect to any Plan which would subject any Credit Party or any Subsidiary to either a civil penalty assessed pursuant to Section 502(i) of ERISA or a tax imposed by Section 4975 of the Code, (ii) fail to make full payment when due of all amounts which, under the provisions of any Plan, any Credit Party, any Subsidiary or any ERISA Affiliate is required to pay minimum required contributions (as such term is defined in Section 302 of ERISA and Section 412 of the Code), with respect to any Pension Plan or (iii) fail to make any payments to any Multiemployer Plan that any Credit Party, any Subsidiary or any of the ERISA Affiliates may be required to make under any agreement relating to such Multiemployer Plan or any law pertaining thereto.

7.12 Environmental Matters; Reporting. The Credit Parties will, and will cause each Subsidiary to, observe and comply with all Environmental Laws to the extent non-compliance could reasonably be expected, individually or in the aggregate, to result in a Material Adverse Effect. The Credit Parties will, and will cause each Subsidiary to, give the Lenders prompt written notice of any violation as to any Environmental Law by any Credit Party or any Subsidiary and of the commencement of any judicial or administrative proceeding relating to Environmental Laws (a) in which an adverse result would have a material adverse effect on any operating permits, air emission permits, water discharge permits, hazardous waste permits or other environmental permits held by any Credit Party or any Subsidiary, or (b) which could reasonably be expected to result in a Material Adverse Effect or which will require a material expenditure by any Credit Party or any Subsidiary to cure any alleged problem or violation.

7.13 Cash Deposits; Deposit Accounts; Securities Accounts.

(a) The Credit Parties shall take, and shall cause their respective Subsidiaries to take, all actions necessary to maintain, preserve and protect the rights and interests of the Collateral Agent, for the benefit of the Lenders, with respect to all cash deposits of the Credit Parties and all other proceeds of Collateral and shall not open any Deposit Account or Securities Account, as the case may be, without simultaneously entering into a Control Agreement; *provided*, *that*, so long as no Default or Event of Default shall have occurred and be continuing, the Credit Parties and their respective Subsidiaries shall be permitted to maintain (i) payroll accounts not subject to the Collateral Agent's or the Lenders' control, (ii) Government Depository Accounts not subject to the Collateral Agent's or the Lenders' control as long as the Credit Parties observe all the requirements of this Section 7.13, and (iii) other bank accounts (including, without limitation, Securities Accounts) not subject to the Collateral Agent's or the Lenders' control, in the case of this clause (iii), so long as the aggregate amount of funds on deposit and financial assets credited thereto in all such bank accounts (including, without limitation, Securities Accounts) does not exceed $500,000 at any time (each, an "Excluded Account").

(b) The Credit Parties shall maintain the Government Depository Account and instruct the depository institution where such Government Depository Account is maintained to automatically, at the end of each Business Day, transfer all amounts on deposit in the Government Depository Account to a Controlled Account. The Government Depository Account will be the only account into which Government Receivables will be deposited and all Governmental Payors will be directed to remit all Government Receivables for deposit in the Government Depository Account. In the event that a Credit Party or a Subsidiary receives any Collections that should have been sent to the Government Depository Account, such Credit Party shall, or shall cause such Subsidiary to, as the case

may be, promptly upon receipt, deposit such Collections directly to the Government Depository Account in the form received.

(c) The Credit Parties will, and will cause each Subsidiary to, cause all Collections other than Government Receivables to be sent directly to a Controlled Account. In the event that a Credit Party or a Subsidiary receives any Collections that should have been sent to a Controlled Account, such Credit Party shall, or shall cause such Subsidiary to, as the case may be, promptly upon receipt deposit such Collections directly to a Controlled Account in the form received. Until so forwarded, such Collections shall be held in trust for the benefit of the Lenders.

(d) The Credit Parties will, and will cause each Subsidiary to, use commercially reasonable efforts to cause payors of Health-Care-Insurance Receivables under new provider agreements to segregate Government Receivables from non-governmental Collections and deposit Government Receivables into the Government Depository Account and non-governmental Collections into a Controlled Account.

(e) Notwithstanding anything in any Control Agreement to the contrary, the Credit Parties agree that they shall be liable for any fees and charges in effect from time to time and charged by the depository institution in connection with the Controlled Accounts and the Government Depository Account and that the Collateral Agent and the Lenders shall have no liability therefor. The Credit Parties hereby indemnify and agree to hold the Collateral Agent and the Lenders harmless from any and all liabilities, claims, losses and demands whatsoever, including reasonable and documented out-of-pocket attorneys' fees and expenses, arising from or relating to actions of the Collateral Agent pursuant to this Section 7.13 or any Control Agreement or similar agreement, except to the extent of such losses arising solely from the Collateral Agent's bad faith, gross negligence or willful misconduct as determined in a final and non-appealable judgment by a court of competent jurisdiction.

(f) If any Credit Party breaches its obligation to, or to cause a Subsidiary to, direct payments of the proceeds of the Collateral to a Controlled Account or the Government Depository Account as herein required, the Collateral Agent, as the irrevocably made, constituted and appointed true and lawful attorney for the Credit Parties, may upon reasonable prior notice to the Credit Parties, by the signature or other act of any of the Collateral Agent's officers (without requiring any of them to do so), direct any account debtor to pay proceeds of the Collateral to the Credit Parties and their respective Subsidiaries by directing payment to a Controlled Account or the Government Depository Account, as applicable.

7.14 Landlord's Waivers and Consents. In the case of each new lease for a Material Leasehold Property entered into after the Closing Date, the Credit Parties shall (a) provide notice thereof to the Collateral Agent and (b) if requested by the Collateral Agent, (i) provide copies of the lease, and all amendments thereto, between the Credit Party and the landlord or tenant party thereto, and (ii) use commercially reasonable efforts to obtain a Landlord's Waiver and Consent with respect thereto.

7.15 Post-Closing Obligations. The Credit Parties shall, and shall cause each Subsidiary to, within the time periods set forth therefor on Schedule 7.15 (or such longer periods of time as may be agreed to by the Lenders), deliver to the Collateral Agent and the Lenders such documents, instruments, certificates and/or agreements as are listed on Schedule 7.15 or take such other actions as are described on Schedule 7.15, in each case in form and substance reasonably satisfactory to the Lenders.

ARTICLE 8
NEGATIVE COVENANTS

Until the Obligations have been paid in full each Credit Party covenants and agrees with the Lenders that:

8.1 Indebtedness. The Credit Parties will not, and will not permit any Subsidiary to, create, incur, assume or permit to exist any Indebtedness, except:

(a) Indebtedness under the Loan Documents;

(b) Existing Debt (of the type described in clause (b) of the definition of "Existing Debt") on the Closing Date which is set forth in Schedule 8.1 and any extension, renewal, refunding or replacement of any such Indebtedness that does not increase the principal amount thereof, except by an amount equal to unpaid accrued interest and premiums thereon plus underwriting discounts, other reasonable and customary fees, commissions and expenses (including upfront fees, original issue discount or initial yield payments) incurred in connection with the relevant extension, renewal, refunding or replacement;

(c) intercompany Indebtedness permitted under Section 8.5 (other than by reference to this Section 8.1 (or any clause hereof));

(d) Indebtedness incurred after the Closing Date (determined on a consolidated basis without duplication in accordance with GAAP) consisting of Capital Lease Obligations and/or purchase money Indebtedness secured by Liens permitted under Section 8.2(k), in an aggregate principal amount for all such Indebtedness at any time outstanding not to exceed $10,000,000;

(e) (i) Indebtedness incurred after the Closing Date in an aggregate principal amount at any time outstanding not to exceed $2,000,000, secured by a Lien encumbering any real property owned by any of the Credit Parties (it being understood, for the avoidance of doubt, that Indebtedness incurred under (x) the Comerica Real Estate Loan Documents, not to exceed an aggregate principal amount of $2,000,000 and (y) the Lubbock Mortgage, not to exceed an aggregate principal amount of $2,500,000 shall be excluded from the calculation of the basket set forth in this clause (e)(i)), (ii) Indebtedness under the Comerica Real Estate Loan Documents in an aggregate principal amount at any time outstanding not to exceed $2,000,000, and (iii) Indebtedness under the Lubbock Mortgage in an aggregate principal amount at any time outstanding not to exceed $2,500,000;

(f) Indebtedness which may be deemed to exist pursuant to any guaranties, performance, surety, statutory, appeal or similar obligations incurred in the ordinary course of business and Indebtedness constituting guaranties of the obligations of suppliers, customers, franchisees and licensees of the Borrower and its Subsidiaries in the ordinary course of business;

(g) Indebtedness incurred by the Borrower and its Subsidiaries in respect of letters of credit, bank guarantees, bankers' acceptances, warehouse receipts or similar instruments in each case in respect of workers compensation claims, health, disability or other employee benefits or property, casualty or liability insurance or self-insurance or other Indebtedness with respect to reimbursement-type obligations regarding workers compensation claims;

(h) Indebtedness in respect of cash management obligations, including netting services, automatic clearinghouse arrangements, overdraft protections, employee credit card programs, other similar arrangements and otherwise in connection with deposit accounts, and any guarantee

obligations of the Borrower and its Subsidiaries in connection therewith, in each case entered into in the ordinary course of business; *provided*, *that*, the aggregate outstanding amount of all such Indebtedness shall not exceed $2,500,000 at any time;

(i) Indebtedness (other than, for the avoidance of doubt, Indebtedness for borrowed money) of the Borrower or any of its Subsidiaries consisting of obligations under deferred compensation, purchase price or other similar arrangements incurred by the Borrower or such Subsidiary in the ordinary course of business;

(j) unsecured Indebtedness of the Borrower or any of its Subsidiaries consisting of obligations to purchase the capital stock or other equity interests of the Borrower or such Subsidiary from present or former officers, employees or directors of the Borrower or such Subsidiary following the death, disability or termination of employment or in connection with the repurchase of such capital stock or other equity interests in order to pay taxes of such officer, employee or director in accordance with any stock incentive plan approved by the Borrower's or such Subsidiary's board of directors, in an aggregate outstanding principal amount not to exceed $1,000,000 at any time;

(k) other Indebtedness of the Borrower or any of its Subsidiaries; *provided*, *that*, the aggregate outstanding principal amount of all such Indebtedness shall not exceed $1,500,000 at any time;

(l) Guarantees permitted under Section 8.3 (other than by reference to this Section 8.1 (or any clause hereof));

(m) (i) the Carmenta Earn-Out Payments and (ii) the Avero Earn-Out Payments;

(n) Indebtedness of the Borrower or any of its Subsidiaries consisting of unsecured seller notes and/or unsecured earn-out payment obligations in connection with any Permitted Acquisition in an aggregate amount not to exceed $3,000,000 at any time; and

(o) Indebtedness incurred by Subsidiaries that are not Credit Parties in an aggregate outstanding principal amount for all such Indebtedness not to exceed $1,500,000 at any time.

8.2 Liens. The Credit Parties will not, and will not permit any Subsidiary to, create, incur, assume or permit to exist any Lien on any Property or asset now owned or hereafter acquired by it (including, without limitation, any Lien on Intellectual Property), or assign or sell any income or revenues (including Accounts) or rights in respect of any thereof, except (the following being called "Permitted Liens"):

(a) Liens created under the Loan Documents;

(b) any Lien on any Property or asset of any Credit Party or Subsidiary existing on the Closing Date and set forth in Schedule 8.2; *provided*, *that*, (i) such Lien shall not apply to any other Property or asset of such Person and (ii) such Lien shall secure only those obligations which it secures on the Closing Date and extensions, refinancings, renewals, refundings and replacements thereof that do not increase the outstanding principal amount thereof, except by an amount equal to unpaid accrued interest and premiums thereon plus underwriting discounts, other reasonable and customary fees, commissions and expenses (including upfront fees, original issue discount or initial yield payments) incurred in connection with the relevant extension, renewal, refunding or replacement;

(c) Liens imposed by any Governmental Authority for Taxes not yet delinquent or which are being contested in good faith and by appropriate proceedings if adequate reserves with respect

thereto are maintained on the books of the applicable Credit Party or Subsidiary in accordance with GAAP and which reserves shall be acceptable to the Lenders;

(d) landlords', carriers', warehousemen's, mechanics', materialmen's, repairmen's or other like Liens, and vendors' Liens imposed by statute or common law not securing the repayment of Indebtedness, arising in the ordinary course of business which are not overdue for a period of more than 60 days or which are being contested in good faith and by appropriate proceedings and Liens securing judgments (including, without limitation, pre-judgment attachments) but only to the extent for an amount and for a period not resulting in an Event of Default under Section 9.1(j);

(e) pledges or deposits under worker's compensation, unemployment insurance and other social security legislation and pledges or deposits to secure the performance of bids, tenders, trade contracts (other than for borrowed money), leases (other than capital leases), utility purchase obligations, statutory obligations, surety and appeal bonds, performance bonds and other obligations of a like nature incurred in the ordinary course of business;

(f) easements, rights-of-way, restrictions and other similar encumbrances incurred in the ordinary course of business and encumbrances consisting of zoning restrictions, easements, licenses, restrictions on the use of Property or minor imperfections in title thereto which, in the aggregate, are not material in amount, and which do not, in the aggregate, materially detract from the value of the Property of any Credit Party or any Subsidiary or materially interfere with the ordinary conduct of the business of any Credit Party or any Subsidiary;

(g) any interest or title of a lessor or sublessor under any lease of real estate permitted hereunder;

(h) purported Liens evidenced by the filing of precautionary UCC financing statements relating solely to operating leases of personal property entered into in the ordinary course of business;

(i) Liens in favor of customs and revenue authorities arising as a matter of law to secure payment of customs duties in connection with the importation of goods;

(j) Liens consisting of bankers' liens and rights of setoff or similar rights and remedies as to deposit accounts, securities accounts and other funds and investment property maintained with a creditor depository institution or securities intermediary, in each case, arising by operation of law or granted pursuant to customary account documentation entered into in connection with the establishment of cash management arrangements in the ordinary course of business, and Liens on documents presented in letter of credit drawings; and

(k) Liens on fixed or capital assets (i) of any Credit Party or any Subsidiary and in existence on the Closing Date securing Indebtedness (including Capital Lease Obligations), in each case, permitted by Section 8.1(b) or (ii) acquired, constructed or improved by any Credit Party or any Subsidiary after the Closing Date, in each case, securing Indebtedness (including Capital Lease Obligations) permitted by Section 8.1(d); *provided*, *that*, solely with respect to Liens incurred in reliance on sub-clause (ii), (A) such Liens and the Indebtedness secured thereby are incurred prior to or within 180 days after such acquisition or the completion of such construction or improvement or were in effect at the time the Credit Parties or such Subsidiary acquired the applicable assets or stock, (B) the Indebtedness secured thereby does not exceed the cost of acquiring, constructing or improving such fixed or capital assets and (C) such security interests shall not apply to any other property or assets of the Credit Parties or any Subsidiary (other than other fixed or capital assets financed by a common creditor);

(l) Liens on real property of the Credit Parties and their respective Subsidiaries securing Indebtedness permitted by Section 8.1(e) (including, without limitation, liens in favor of (x) Comerica (or any replacement lender) on the real property securing the Indebtedness incurred under the Comerica Real Estate Loan Documents and (y) any lender on the real property securing the Indebtedness incurred under the Lubbock Mortgage); *provided*, *that*, (A) such Liens and the Indebtedness secured thereby are incurred prior to or within 180 days after the acquisition of such real property or were in effect at the time the Credit Parties or such Subsidiary thereof acquired such real property or stock (or, with regard to any extension, refinancing, renewal, refunding or replacement of any such Indebtedness, were in effect at the time of such extension, refinancing, renewal, refunding or replacement), (B) the Indebtedness secured thereby does not exceed the fair market value of such real property, and (C) such security interests shall not apply to any other property or assets of the Credit Parties or any Subsidiary; and

(m) Liens existing on property at the time of its acquisition or existing on the property of any Person at the time such Person becomes a Subsidiary, in each case, after the Closing Date (other than Liens on the capital stock or other equity interests of any Person that becomes a Subsidiary to the extent that such capital stock or other equity interests are owned by a Credit Party); *provided*, *that*, (i) such Lien was not created in contemplation of such acquisition or such Person becoming a Subsidiary, (ii) such Lien does not extend to or cover any other assets or property (other than the proceeds, products and accessions thereof and other than after-acquired property subjected to a Lien securing Indebtedness and other obligations incurred prior to such time and which Indebtedness and other obligations are permitted hereunder that require, pursuant to their terms at such time, a pledge of after-acquired property, it being understood that such requirement shall not be permitted to apply to any property to which such requirement would not have applied but for such acquisition) and (iii) the Indebtedness secured thereby is permitted by Section 8.1.

8.3 Contingent Liabilities. The Credit Parties will not, and will not permit any Subsidiary to, Guarantee the Indebtedness or other obligations of any Person, or Guarantee the payment of dividends or other distributions upon the stock of, or the earnings of, any Person, except:

(a) endorsements of negotiable instruments for deposit or collection or similar transactions in the ordinary course of business;

(b) Guarantees created under the other Loan Documents;

(c) Guarantees and letters of credit in effect on the Closing Date which are disclosed in Schedule 8.1, and any replacements thereof in amounts not exceeding such Guarantees; and

(d) Guarantees of obligations of the Borrower in favor of Comerica securing Indebtedness under the Comerica Loan Documents permitted by Section 8.1(e)(ii).

8.4 Fundamental Changes; Asset Sales.

(a) The Credit Parties will not, and will not permit any Subsidiary to, enter into any transaction of merger or consolidation or amalgamation, or liquidate, wind up or dissolve itself (or suffer any liquidation or dissolution). The Credit Parties will not, and will not permit any Subsidiary to, acquire any business or property from, or capital stock of, or other equity interests in, or be a party to any acquisition of, any Person except for purchases of property to be used in the ordinary course of business, Investments permitted under Section 8.5 (other than by reference to this Section 8.4 (or any clause hereof)) and Capital Expenditures. Notwithstanding the foregoing, (i) any Credit Party may be merged or combined with or into any other Credit Party (*provided*, *that*, if such merger involves the Borrower,

(x) the Borrower shall be the surviving entity and (y) no Change of Control shall occur) and (ii) any Subsidiary that is not a Credit Party may be merged or consolidated into (x) any Credit Party or (y) any other Subsidiary that is not a Credit Party.

(b) The Credit Parties will not, and will not permit any Subsidiary to, convey, sell, lease, assign, transfer or otherwise dispose (including any Disposition) of, in one transaction or a series of transactions, any part of their business or property, whether now owned or hereafter acquired including, without limitation, receivables and leasehold interests, but excluding (the following being called "Permitted Dispositions"):

(i) the sale, assignment, lease, transfer or other disposition of any Inventory or other property sold or disposed of in the ordinary course of business and on ordinary business terms;

(ii) the sale, assignment, lease, transfer or other disposition of real property, to the extent the same would not interfere with the operation of the business of the Credit Parties and their respective Subsidiaries;

(iii) the granting of Liens permitted by Section 8.2;

(iv) licenses, sublicenses, leases or subleases to third parties not interfering in or impairing in any material respect the business of the Credit Parties and their respective Subsidiaries;

(v) the sale, assignment, lease, transfer or other disposition of delinquent accounts receivable in connection with the collection or compromise thereof in the ordinary course of business;

(vi) the sale, assignment, lease, transfer or other disposition of contractual rights (in the form of the surrender or waiver thereof), or contract or tort claims (in the form of the release, settlement or surrender thereof) in the ordinary course of business involving, individually, less than $500,000;

(vii) the sale, assignment, lease, transfer or other disposition of any or all of a Guarantor's property (upon voluntary liquidation or otherwise) to any other Credit Party;

(viii) Dispositions of assets consisting of surplus, obsolete, no longer used or worn-out property, tools or Equipment;

(ix) the sale of all or substantially all of the equity interests or assets of a Guarantor so long as the aggregate fair market value of all of the equity interests and assets sold or otherwise disposed of by the Credit Parties and their respective Subsidiaries in all such transactions in any fiscal year shall not exceed $3,000,000; and

(x) other Dispositions so long as the aggregate fair market value of all of the assets sold or otherwise disposed of by the Credit Parties and their respective Subsidiaries in all such transactions in any fiscal year shall not exceed $1,000,000.

(c) Except to the extent acquired in connection with any Permitted Acquisition, the Credit Parties will not, and will not permit any Subsidiary to, form or acquire any Foreign Subsidiaries without the express prior written consent of the Lenders.

8.5 Investments; Hedging Agreements.

(a) The Credit Parties will not, and will not permit any Subsidiary to, make or permit to remain outstanding any Investment, except:

(i) Investments consisting of Guarantees permitted by Section 8.3 (other than by reference to this Section 8.5 (or any clause hereof)) and Indebtedness permitted by Section 8.1 (other than by reference to this Section 8.5 (or any clause hereof)); Intercompany Indebtedness; and Investments by any Credit Party in any other Credit Party;

(ii) Investments to the extent constituting (i) securities received by any Credit Party or any Subsidiary in satisfaction or partial satisfaction thereof from financially troubled account debtors or received in connection with the satisfaction of judgments or the foreclosure of Liens; (ii) deposits, prepayments and other credits to suppliers made in the ordinary course of business consistent with the past practices of the Borrower and its Subsidiaries; (iii) extensions of credit in the nature of accounts receivable or notes receivable arising from the grant of trade credit in the ordinary course of business; (iv) prepaid expenses, negotiable instruments held for collection or lease, workers' compensation, utility, lease, performance and other similar deposits provided to third parties in the ordinary course of business; and (v) endorsements for collection or deposit in the ordinary course of business;

(iii) Investments not to exceed $300,000 in the aggregate in any fiscal year consisting of (i) travel advances and employee relocation loans and other employee loans and advances in the ordinary course of business of the Credit Parties and their respective Subsidiaries, and (ii) loans to employees, officers or directors relating to the purchase of capital stock or other equity interests of the Borrower or its Subsidiaries pursuant to employee equity purchase agreements approved by the Borrower's board of directors;

(iv) Investments described on Schedule 8.5;

(v) Permitted Investments;

(vi) Checking and deposit accounts with banks used in the ordinary course of business;

(vii) Investments in an aggregate amount not to exceed at any time $2,500,000, so long as no Event of Default has occurred and is continuing or would result therefrom;

(viii) Permitted Acquisitions;

(ix) payments to, or other Investments in or on behalf of, Avero or the Owner Parties, as described in the Avero Acquisition Agreement and the Avero Management Services Contract; and

(x) Investments by Credit Party in Subsidiaries that are not Credit Parties, in an aggregate outstanding amount for all such Investments not to exceed $1,500,000 at any time.

(b) The Credit Parties will not, and will not permit any Subsidiary to, enter into any Hedging Agreement, other than Hedging Agreements entered into (i) in the ordinary course of business or (ii) in connection with the Comerica Real Estate Loan Documents, in each case to hedge or mitigate risks

to which the Credit Parties or any Subsidiary are exposed in the conduct of their business or the management of their liabilities.

8.6 Restricted Junior Payments. The Credit Parties will not, and will not permit any Subsidiary to, declare or make any Restricted Junior Payment at any time; *provided*, *that*: (a) any Credit Party that is a Subsidiary of another Credit Party may pay dividends to such Credit Party; (b) any Subsidiary may pay dividends to Persons that own capital stock or other equity interests in such Subsidiary, ratably according to their respective holdings of the type of capital stock or other equity interest in respect of which such dividend is being made; (c) so long as no Event of Default shall have occurred and be continuing or would result therefrom, (i) the Credit Parties may pay Permitted Pre-IPO Dividends prior to the consummation of a Qualified IPO and (ii) the Credit Parties may pay Permitted Post-IPO Dividends following the consummation of a Qualified IPO; (d) so long as no Event of Default has occurred and is continuing or would result therefrom, the Credit Parties may make Restricted Junior Payments in order to permit the Borrower to purchase capital stock or other equity interests of the Borrower from (x) present or former directors, officers or employees (or their transferees, estates or beneficiaries under their estates) upon the death, disability, resignation or termination of such director, officer or employee, in an aggregate amount for all such Restricted Junior Payments made in reliance on this clause (d)(x) not to exceed (i) $5,000,000, for the period from the Closing Date up to (but excluding) the first anniversary of the Closing Date, and (ii) $1,000,000, per year thereafter or (y) its equityholders, including the Lenders and their Controlled Investment Affiliates, in an aggregate amount for all such Restricted Junior Payments made in reliance on this clause (d)(y) not to exceed (i) $15,000,000, for the period from the Closing Date up to (but excluding) the first anniversary of the Closing Date and (ii) $1,000,000 per year thereafter; and (e) the Credit Parties may make Restricted Junior Payments (in addition to any Permitted Dividends) to Stylli in an amount not to exceed $400,000 per fiscal year for services rendered.

8.7 Transactions with Affiliates. The Credit Parties will not, and will not permit any Subsidiary to, directly or indirectly: (a) make any Investment in an Affiliate; (b) transfer, sell, lease, license, assign or otherwise dispose of any property to an Affiliate; (c) merge into or consolidate with an Affiliate, or purchase or acquire property from an Affiliate; or (d) enter into any other transaction directly or indirectly with or for the benefit of an Affiliate (including, without limitation, guarantees and assumptions of obligations of an Affiliate); *provided*, *that*:

(i) transactions solely among Credit Parties shall be permitted;

(ii) transactions expressly permitted by Section 8.1, Section 8.3, Section 8.4, Section 8.5 or Section 8.6 (in each case, other than by reference to this Section 8.7 (or any clause hereof)) shall be permitted;

(iii) any Affiliate who is a natural Person may serve as a director, officer, employee or consultant of any Credit Party or any Subsidiary, receive reasonable compensation for his or her services in such capacity and benefit from Permitted Investments to the extent specified in clause (e) of the definition thereof; *provided*, *that*, the Borrower shall not grant or issue to Stylli options or shares of the Borrower's common stock, unless such grant or issuance is approved in accordance with Section 8.7(d)(v) below;

(iv) the Credit Parties and their respective Subsidiaries may engage in and continue the transactions with or for the benefit of Affiliates which are described in Schedule 8.7;

(v) the Credit Parties and their respective Subsidiaries may engage in transactions with Affiliates in the ordinary course of business (including, without limitation,

employment, compensation and severance arrangements between the Borrower, any of its Subsidiaries and their respective officers, directors, consultants and employees (including loans and advances permitted hereunder)) on terms which are no less favorable to such Credit Party or such Subsidiary than those likely to be obtained in an arms' length transaction between a Credit Party or such Subsidiary and a non-affiliated third party that, in each case, are approved by (A) the board of directors of the Borrower, including the Athyrium Director or (B) the holders of a majority of the Series B Preferred Stock, voting as a separate class;

(vi) the Credit Parties and their respective Subsidiaries may enter into each agreement between or among the Borrower, Avero Holdings, Avero, and the Owner Parties relating to the Avero Contracts; and

(vii) the Credit Parties and their respective Subsidiaries may engage in any transaction with an Affiliate that is expressly approved in advance by the Athyrium Director.

8.8 Restrictive Agreements. The Credit Parties will not, and will not permit any Subsidiary to, directly or indirectly, enter into, incur or permit to exist any agreement or other arrangement (other than the Loan Documents) that prohibits, restricts or imposes any condition upon (a) the ability of any Credit Party or any Subsidiary to create, incur or permit to exist any Lien upon any of its property or assets (including, for the avoidance of doubt, Intellectual Property), or (b) the ability of any Subsidiary to pay dividends or other distributions with respect to any shares of its capital stock or other equity interests or to make or repay loans or advances to any Credit Party or to Guarantee Indebtedness of any Credit Party; *provided*, *that*: (i) the foregoing shall not apply to restrictions and conditions imposed by law, (ii) the foregoing shall not apply to restrictions and conditions existing on the Closing Date identified on Schedule 8.8 (but shall apply to any extension or renewal of, or any amendment or modification expanding the scope of, any such restriction or condition), (iii) the foregoing shall not apply to customary restrictions and conditions contained in agreements relating to the sale of stock or assets of a Subsidiary pending such sale; *provided*, *that*, such restrictions and conditions apply only to the Subsidiary or assets that are to be sold and such sale is permitted hereunder, (iv) clause (a) of the foregoing shall not apply to restrictions or conditions imposed by any agreement relating to secured Indebtedness permitted by this Agreement if such restrictions or conditions apply only to the property or assets securing such Indebtedness, (v) clause (a) of the foregoing shall not apply to customary provisions in existing licenses, leases and other contracts restricting the assignment thereof, and any other contracts subsequently entered into by a Credit Party or a Subsidiary containing restrictions no more burdensome than those contained in such existing agreements, (vi) the foregoing shall not apply to restrictions on cash or other deposits or net worth imposed by suppliers, landlords, customers, insurance and surety or bonding companies under contracts entered into in the ordinary course of business, and (vii) clause (a) of the foregoing shall not apply to restrictions and conditions set forth in the Comerica Real Estate Loan Documents relating to the Borrower.

8.9 Sale-Leaseback Transactions. The Credit Parties will not, and will not permit any Subsidiary to, directly or indirectly, enter into any arrangements with any Person whereby such Credit Party or such Subsidiary shall sell or transfer (or request another Person to purchase) any property, real, personal or mixed, used or useful in its business, whether now owned or hereafter acquired, and thereafter rent or lease such property from any Person.

8.10 Minimum Cash Covenant. The Credit Parties shall not permit unrestricted cash and cash equivalents of the Credit Parties held in one or more Controlled Accounts at any time to be less than $5,000,000.

8.11 Lines of Business. The Credit Parties will not, and will not permit any Subsidiary to, engage to any substantial extent in any line or lines of business activity other than (a) the types of businesses engaged in by the Credit Parties and their respective Subsidiaries on the Closing Date and businesses substantially related or incidental thereto, and (b) such other lines of business as may be consented to by the Lenders.

8.12 Modifications of Certain Documents. The Credit Parties will not, and will not permit any Subsidiary to, consent to any modification, amendment, supplement, extension, renewal, refinancing, refunding, replacement, restatement or waiver of, any documents or agreements (or any provisions thereof) evidencing or governing any Existing Debt (of the type described in clause (b) of the definition thereof), the Comerica Real Estate Loan Documents, the Lubbock Mortgage, the Avero Contracts or any of the other agreements identified (or which should be identified) on Schedule 5.14, in each case, in a manner materially adverse to the Lenders.

8.13 Deposit Accounts. The Credit Parties will not, and will not permit any Subsidiary to, withdraw any amounts from the Government Depository Account, nor shall any Credit Party or any Subsidiary change the procedures or sweep instructions under the agreements governing the Controlled Accounts or the Government Depository Account, in each case, without the prior consent of the Collateral Agent.

8.14 Use of Proceeds. The Credit Parties will not, and will not permit any Subsidiary to, use the proceeds of any Loan for the purpose of purchasing or carrying "margin stock" as such term is defined in Regulations T, U and X of the Board or to extend credit to others for the purpose of purchasing or carrying "margin stock" or to refund indebtedness originally incurred for such purpose.

8.15 Organization Documents. The Credit Parties will not, and will not permit any Subsidiary to, amend, modify or change its Organization Documents in a manner materially adverse to the Lenders.

8.16 Sanctions. The Credit Parties will not, and will not permit any Subsidiary to, directly or indirectly, use any Loan or the proceeds of any Loan, or lend, contribute or otherwise make available such Loan or the proceeds of any Loan to any Person, to fund any activities of or business with any Person, or in any Designated Jurisdiction, that, at the time of such funding, is the subject of Sanctions, or in any other manner that will result in a violation by any Person (including any Person participating in the transaction, whether as Lender or Collateral Agent) of Sanctions.

8.17 Anti-Corruption Laws. The Credit Parties will not, and will not permit any Subsidiary to, directly or indirectly, use any Loan or the proceeds of any Loan for any purpose which would breach the United States Foreign Corrupt Practices Act of 1977, the UK Bribery Act 2010 and other similar anti-corruption legislation in other jurisdictions applicable to such Credit Party or such Subsidiary.

ARTICLE 9
EVENTS OF DEFAULT

9.1 Events of Default. The occurrence of any of the following events shall be deemed to constitute an "Event of Default" hereunder:

(a) any Credit Party shall fail to pay to the Lenders or any other Affiliate of the Lenders, (i) any principal of, or Prepayment Premium with respect to, any Loans when the same shall become due and payable, whether at the due date thereof or at a date fixed for prepayment thereof, by

acceleration of such due or prepayment date, or otherwise or (ii) within three (3) Business Days after the date on which such interest or other Obligation is due, interest on any Loans or any other Obligation of any Credit Party to the Lenders or any other Affiliate of the Lenders when the same shall become due and payable, whether at the due date thereof or at a date fixed for prepayment thereof, by acceleration of such due or prepayment date, or otherwise;

(b) any representation or warranty made or deemed made by or on behalf of any Credit Party in or in connection with this Agreement, any of the other Loan Documents or any amendment or modification hereof or thereof, or in any report, certificate, financial statement or other document furnished pursuant to or in connection with this Agreement, any of the other Loan Documents or any amendment or modification hereof or thereof, shall prove to have been incorrect in any material respect when made or deemed made;

(c) any Credit Party (i) shall fail to observe or perform any covenant, condition or agreement contained in Sections 7.1(a), 7.1(b), 7.2, 7.3 (solely with respect to the existence of the Borrower), 7.5, 7.6 (with respect to inspection rights), 7.8, 7.9, 7.13 or in Article 8 or (ii) shall fail to observe or perform any other covenant, condition or agreement contained in Article 7 and such failure described in this clause (ii) shall continue unremedied for a period of thirty (30) days after the earlier of (x) actual knowledge by an officer of any Credit Party and (y) notice thereof from the Lenders to the Credit Parties;

(d) any Credit Party shall fail to observe or perform any covenant, condition or agreement contained in this Agreement (other than those specified in clauses (a), (b) or (c) of this Section 9.1) or any other Loan Document, and such failure shall continue unremedied for a period of thirty (30) days after notice thereof from the Lenders to the Credit Parties;

(e) any Credit Party or any Subsidiary shall fail to make any payment (whether of principal, interest or otherwise and regardless of amount) in respect of any Material Indebtedness or any Material Rental Obligation, when and as the same shall become due and payable, after giving effect to any grace period with respect thereto;

(f) any event or condition occurs that results in (i) any Material Indebtedness of any Credit Party or any Subsidiary becoming due prior to its scheduled maturity or that enables or permits (with or without the giving of notice, the lapse of time or both) the holder or holders of any Material Indebtedness or any trustee or agent on its or their behalf to cause such Material Indebtedness to become due, or to require the prepayment, repurchase, redemption or defeasance thereof, prior to its scheduled maturity, or (ii) the lease with respect to any Material Rental Obligation of any Credit Party or any Subsidiary being terminated prior to its scheduled expiration date or that enables or permits (with or without the giving of notice, the lapse of time or both) the counterparty to such lease to cause such lease to be terminated prior to its scheduled expiration date;

(g) an involuntary proceeding shall be commenced or an involuntary petition shall be filed seeking (i) liquidation, reorganization or other relief in respect of any Credit Party or any Subsidiary or its debts, or of a substantial part of its assets, under any Federal, state or foreign bankruptcy, insolvency, receivership or similar law now or hereafter in effect or (ii) the appointment of a receiver, trustee, custodian, sequestrator, conservator or similar official for any Credit Party or any Subsidiary or for a substantial part of its assets, and, in any such case, such proceeding or petition shall continue undismissed for 60 days or an order or decree approving or ordering any of the foregoing shall be entered;

(h) any Credit Party or any Subsidiary shall (i) voluntarily commence any proceeding or file any petition seeking liquidation, reorganization or other relief under any Federal, state

or foreign bankruptcy, insolvency, receivership or similar law now or hereafter in effect, (ii) consent to the institution of, or fail to contest in a timely and appropriate manner, any proceeding or petition described in clause (g) of this Article, (iii) apply for or consent to the appointment of a receiver, trustee, custodian, sequestrator, conservator or similar official for any Credit Party or any Subsidiary or for a substantial part of its assets, (iv) file an answer admitting the material allegations of a petition filed against it in any such proceeding, (v) make a general assignment for the benefit of creditors or (vi) take any action for the purpose of effecting any of the foregoing;

(i) any Credit Party or any Subsidiary shall become unable, admit in writing or fail generally to pay its debts as they become due;

(j) (i) a final judgment or judgments for the payment of money in excess of $2,000,000 in the aggregate (to the extent not covered by independent third-party insurance as to which the insurer has been notified of the potential claim and does not dispute coverage) or (ii) a final nonmonetary judgment or judgments that could reasonably be expected, either individually or in the aggregate, to have a Material Adverse Effect, in either case, shall be rendered against any Credit Party or any Subsidiary by one or more courts, administrative tribunals or other bodies having jurisdiction over any Credit Party or any Subsidiary and the same shall not be discharged (or provision shall not be made for such discharge), bonded, or a stay of execution thereof shall not be procured, within 60 days from the date of entry thereof and the relevant Credit Party or Subsidiary shall not, within said period of 60 days, or such longer period during which execution of the same shall have been stayed, appeal therefrom and cause the execution thereof to be stayed during such appeal;

(k) an ERISA Event shall have occurred that, in the reasonable opinion of the Lenders, when taken together with all other ERISA Events that have occurred, could reasonably be expected to result in a Material Adverse Effect;

(l) there shall occur any Change of Control;

(m) any of the following shall occur: (i) the Liens created hereunder or under the other Loan Documents shall at any time (other than by reason of the Lenders relinquishing such Lien) cease in any material respect to constitute valid and perfected Liens on the Collateral intended to be covered thereby; (ii) except for expiration in accordance with its respective terms, any Loan Document shall for whatever reason be terminated, or shall cease to be in full force and effect; or (iii) the enforceability of any Loan Document shall be contested by any Credit Party;

(n) any Guarantor shall assert that its obligations under any Loan Document shall be invalid or unenforceable;

then, and in every such event (other than an event described in clause (g), (h) or (i) of this Section 9.1), and at any time thereafter during the continuance of such event, the Lenders may, by notice to the Borrower, take any or all of the following actions, at the same or different times: (i) notify the Borrower that the outstanding principal of the Loans shall bear interest at the Post-Default Rate, and thereupon the outstanding principal of the Loans shall bear interest at the Post-Default Rate, (ii) declare the Loans then outstanding to be due and payable in whole (or in part, in which case any principal not so declared to be due and payable may thereafter be declared to be due and payable), and thereupon the principal of the Loans so declared to be due and payable, together with accrued and unpaid interest thereon, Prepayment Premium with respect thereto (solely with respect to a Specified Acceleration Event), and all fees and all other then-outstanding Obligations, shall become due and payable immediately, without presentment, demand, protest or other notice of any kind, all of which are hereby waived by the Credit Parties, and (iii) the Lenders and any other Affiliate of the Lenders may exercise all

of the rights as secured party hereunder or under the other Loan Documents; and in case of any event with respect to the Credit Parties or any Subsidiary described in clause (g), (h) or (i) of this Section 9.1, the principal of the Loans then outstanding shall automatically bear interest at the Post-Default Rate, the principal of the Loans then outstanding, together with accrued and unpaid interest thereon, Prepayment Premium with respect thereto, and all fees and all other then-outstanding Obligations shall automatically become due and payable without presentment, demand, protest or other notice of any kind, all of which are hereby waived by the Credit Parties, and the Lenders and all other Affiliates of the Lenders shall be permitted to exercise such rights as secured party hereunder or under the other Loan Documents to the extent permitted by applicable law.

ARTICLE 10
MISCELLANEOUS

10.1 Notices. Except in the case of notices and other communications expressly permitted to be given by telephone, all notices and other communications provided for herein shall be in writing and shall be delivered by hand or overnight courier service, mailed by certified or registered mail, sent by telephonic facsimile (fax), or by email (with a copy thereof promptly delivered by one other method specified herein), as follows:

(a) if to any Credit Party, to Progenity, Inc., 4330 La Jolla Village Drive, Suite 200, San Diego, CA 92122, Attention: Vice President of Finance & Accounting (Fax no. (760-268-0771)), email: eric.fox@progenity.com, with a copy to: Progenity, Inc., 4330 La Jolla Village Drive, Suite 200, San Diego, CA 92122, Attention: Legal Department (Fax no. (760-268-0771)), and with a copy to: Gibson, Dunn & Crutcher LLP, 2029 Century Park East, Los Angeles, CA 90067-3026, Attention: Cromwell Montgomery, Esq. (Fax no. (310-551-8741)); and

(b) if to the Collateral Agent or the Lenders, to c/o Athyrium Capital Management, LP, 530 Fifth Avenue, Floor 25, New York, NY 10036, Attention: Andrew C. Hyman and Samuel Helfaer, email: ahyman@athyrium.com and shelfaer@athyrium.com, with a copy to Moore & Van Allen PLLC, Attention: Tripp Monroe (Fax no. (704-378-1942)), email: trippmonroe@mvalaw.com.

Any party hereto may change its address or fax number for notices and other communications hereunder by notice to the other parties hereto. All notices and other communications given to any party hereto in accordance with the provisions of this Agreement shall be deemed to have been given on the date of receipt; *provided*, *that*, notices and other communications given to any party hereto by fax or email shall be deemed to have been given when sent.

The Collateral Agent and the Lenders shall be entitled to rely and act upon any notices (including, without limitation, telephonic or electronic notices, notices of proposed borrowings, and notices of the prepayment of Loans purportedly given by or on behalf of any Credit Party even if (i) such notices were not made in a manner specified herein, were incomplete or were not preceded or followed by any other form of notice specified herein, or (ii) the terms thereof, as understood by the recipient, varied from any confirmation thereof. The Credit Parties shall indemnify the Collateral Agent, each Lender and the Related Parties of each of them from all losses, costs, expenses and liabilities resulting from the reliance by such Person on each notice purportedly given by or on behalf of a Credit Party. All telephonic notices to and other telephonic communications with the Collateral Agent may be recorded by the Collateral Agent, and each of the parties hereto hereby consents to such recording.

10.2 Waivers; Amendments.

(a) No failure or delay by the Lenders or any Affiliate of the Lenders in exercising any right or power hereunder or under any other Loan Document shall operate as a waiver thereof, nor shall any single or partial exercise of any such right or power, or any abandonment or discontinuance of steps to enforce such a right or power, preclude any other or further exercise thereof or the exercise of any other right or power. The rights and remedies of the Lenders and all Affiliates of the Lenders hereunder and under the other Loan Documents are cumulative and are not exclusive of any rights or remedies that they would otherwise have. No waiver of any provision of this Agreement or consent to any departure by any Credit Party or Subsidiary therefrom shall in any event be effective unless the same shall be permitted by paragraph (b) of this Section 10.2, and then such waiver or consent shall be effective only in the specific instance and for the purpose for which given. Without limiting the generality of the foregoing, the making of a Loan shall not be construed as a waiver of any Default, regardless of whether the Lenders may have had notice or knowledge of such Default at the time.

(b) No modification of this Agreement nor any other Loan Document, including any extension or amendment thereof or any waiver of a Default or Event of Default, shall be effective without the prior written agreement of the Collateral Agent, with the consent of Required Lenders, and each Credit Party to such Loan Document; *provided*, *however*, *that*:

(i) without the prior written consent of the Collateral Agent, no modification shall be effective with respect to any provision in a Loan Document that relates to any rights, duties or discretion of the Collateral Agent;

(ii) without the prior written consent of each affected Lender, no modification shall be effective that would (A) extend or increase any commitment of such Lender; or (B) reduce the amount of, or waive or delay payment (including, for the avoidance of doubt, mandatory prepayments) of, any principal, interest, Prepayment Premium or fees payable to such Lender; and

(iii) without the prior written consent of all Lenders, no modification shall be effective that would (A) extend the Maturity Date; (B) alter Section 4.1 (except to add Collateral), or this Section 10.2(b); (C) amend the definitions of Pro Rata or Required Lenders; (D) increase the total commitments; (E) release Collateral with a book value greater than $250,000 during any fiscal year, except as currently contemplated by the Loan Documents; or (E) release any Credit Party from liability for any Obligations, if such Credit Party is solvent at the time of the release.

Notwithstanding anything to the contrary herein, (x) this Agreement may be amended and restated without the consent of any Lender (but with the consent of the Borrower and the Collateral Agent) if, upon giving effect to such amendment and restatement, such Lender shall no longer be a party to this Agreement (as so amended and restated), the commitments of such Lender shall have terminated, such Lender shall have no other commitment or other obligation hereunder and shall have been paid in full all principal, interest and other amounts owing to it or accrued for its account under this Agreement, and (y) the Collateral Agent may amend or modify this Agreement and any other Loan Document to (i) to cure any ambiguity, omission, mistake, defect or inconsistency therein or (ii) grant a new Lien for the benefit of the Lenders, extend an existing Lien over additional property for the benefit of the Lenders or join additional Persons as Credit Parties.

(c) Notwithstanding anything to the contrary contained herein or in any other Loan Document, the authority to enforce rights and remedies hereunder and under the other Loan Documents against the Credit Parties or any of them shall be vested exclusively in, and all actions and proceedings at

law in connection with such enforcement shall be instituted and maintained exclusively by, the Collateral Agent in accordance with Section 9.1 for the benefit of all the Lenders; *provided*, *however*, that the foregoing shall not prohibit (i) the Collateral Agent from exercising on its own behalf the rights and remedies that inure to its benefit (solely in its capacity as Collateral Agent) hereunder and under the other Loan Documents, (ii) any Lender from exercising setoff rights in accordance with Section 10.8, or (iii) any Lender from filing proofs of claim or appearing and filing pleadings on its own behalf during the pendency of a proceeding relative to any Credit Party under any Debtor Relief Law; and *provided*, *further*, that if at any time there is no Person acting as Collateral Agent hereunder and under the other Loan Documents, then (x) the Required Lenders shall have the rights otherwise ascribed to the Collateral Agent pursuant to Section 9.1 and (y) in addition to the matters set forth in clauses (ii) and (iii) of the preceding proviso, any Lender may, with the consent of the Required Lenders, enforce any rights and remedies available to it and as authorized by the Required Lenders.

10.3 Expenses; Indemnity: Damage Waiver.

(a) The Credit Parties jointly and severally agree to pay, or reimburse the Lenders for paying, (i) all reasonable and documented out-of-pocket expenses incurred by the Collateral Agent and the Lenders, including the reasonable fees, charges and disbursements of its outside counsel, in connection with the preparation, negotiation and execution of this Agreement and the other Investment Documents (whether or not the transactions contemplated hereby or thereby shall be consummated) and any amendments, modifications or waivers of the provisions hereof or thereof, and (ii) all documented out-of-pocket expenses incurred by the Collateral Agent and Lenders or any Affiliate of any such Person, including the fees, charges and disbursements of any counsel for the Collateral Agent, the Lenders or any Affiliate thereof, in connection with the enforcement or protection of their rights in connection with this Agreement and the other Investment Documents, including their rights under this Section 10.3, or in connection with the Loans made hereunder, including in connection with any workout, restructuring or negotiations in respect thereof.

(b) The Credit Parties jointly and severally agree to indemnify the Collateral Agent, the Lenders and each Related Party of any of the foregoing Persons (each such Person being called an "Indemnitee") against, and hold each Indemnitee harmless from, any and all losses, claims, damages, liabilities and related expenses, including the reasonable and documented fees, charges and disbursements of any counsel for any Indemnitee and settlement costs, incurred by or asserted against any Indemnitee arising out of, in connection with, or as a result of (i) the execution or delivery of this Agreement, the other Investment Documents or any agreement or instrument contemplated hereby, the performance by the parties hereto and thereto of their respective obligations hereunder or thereunder or the consummation of the transactions contemplated hereby or any other transactions contemplated hereby or thereby or, in the case of the Collateral Agent (and any sub-agent thereof) and its Related Parties only, the administration of this Agreement and the other Loan Documents (including in respect of any matters addressed in Section 2.6), (ii) any Loans or the use of the proceeds therefrom, (iii) any actual or alleged presence, release, or threatened release of Hazardous Materials on or from any property owned, leased or operated by any Credit Party or any Subsidiary, or any Environmental Liability related in any way to any Credit Party or any Subsidiary, or (iv) any actual or prospective claim, litigation, investigation or proceeding relating to any of the foregoing, whether based on contract, tort or any other theory, whether brought by a third party or by the Borrower or any other Credit Party, and regardless of whether any Indemnitee is a party thereto; *provided*, *that*, such indemnity shall not, as to any Indemnitee, be available to the extent that such losses, claims, damages, liabilities or related expenses are determined by a court of competent jurisdiction by final and nonappealable judgment to (x) have resulted from (A) the bad faith, gross negligence or willful misconduct of such Indemnitee or (B) a material breach in bad faith of the funding obligation of such Indemnitee or any of such Indemnitee's Affiliates hereunder, or (y) have not resulted from an act or omission by any Credit Party, any Subsidiary or any of their respective Affiliates

and have been brought by an Indemnitee against any other Indemnitee (other than any claims against the Collateral Agent or a Lender in its capacity or in fulfilling its role as the Collateral Agent or a Lender or any similar role under this Agreement). Anything in this Section 10.3(b) to the contrary notwithstanding, the Credit Parties shall have no obligation to any Indemnitee under this Section 10.3(b) for matters for which such Indemnitee has been fully compensated pursuant to any other provision of this Agreement. This Section 10.3(b) shall not apply with respect to Taxes other than any Taxes that represent losses, claims, damages, etc. arising from any non-Tax claim.

(c) To the extent permitted by applicable law, none of the Credit Parties shall assert, and each Credit Party hereby waives, any claim against any Indemnitee, on any theory of liability, for special, indirect, consequential or punitive damages (as opposed to direct or actual damages) arising out of, in connection with, or as a result of, this Agreement, the other Loan Documents or any agreement or instrument contemplated hereby or thereby, the transactions contemplated hereby, any Loans or the use of the proceeds thereof.

(d) All amounts due under this Section 10.3 shall be payable promptly after written demand therefor.

10.4 Successors and Assigns.

(a) The provisions of this Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns permitted hereby, except that no Credit Party may assign or otherwise transfer any of its rights or obligations hereunder or under any other Loan Document without the prior written consent of the Lenders (and any attempted assignment or transfer without such consent shall be null and void). Nothing in this Agreement, expressed or implied, shall be construed to confer upon any Person (other than the parties hereto, their respective successors and assigns permitted hereby and, to the extent expressly contemplated hereby, the Related Parties of the Lenders) any legal or equitable right, remedy or claim under or by reason of this Agreement or any other Loan Document.

(b) The Lenders may at any time and from time to time assign to one or more assignees all or a portion of their rights and obligations under this Agreement and the other Loan Documents; *provided*, *that*, so long as no Event of Default exists and is continuing, the Borrower's consent shall be required for any such assignment, such consent not to be unreasonably withheld, conditioned or delayed; *provided*, *further*, that notwithstanding the foregoing, the Borrower's consent shall not be required if such assignment is to a Lender or to an Affiliate of a Lender.

(c) The Lenders may at any time and from time to time, sell participations to one or more banks or other entities (a "Participant") in all or a portion of the Lenders' rights and obligations under this Agreement and the other Loan Documents; *provided*, *that*, (i) the Lenders' obligations under this Agreement and the other Loan Documents shall remain unchanged, (ii) the Lenders shall remain solely responsible to the other parties hereto for the performance of such obligations and (iii) the Borrower shall continue to deal solely and directly with the Lenders in connection with the Lenders' rights and obligations under this Agreement and the other Loan Documents. The Borrower agrees that each Participant shall be entitled to the benefits of this Agreement and the other Loan Documents to the same extent as if it were a Lender and had acquired its interest by assignment pursuant to paragraph (b) of this Section 10.4; *provided*, *that*, a Participant (i) agrees to be subject to the provisions of Section 2.8 as if it were an assignee; (ii) shall not be entitled to receive any greater payment under this Agreement or any other Loan Document than the Lenders would have been entitled to receive with respect to the participation sold to such Participant, except to the extent such entitlement to receive a greater payment results from a Change in Law that occurs after the Participant acquired the applicable participation; and

(iii) shall deliver the documentation required under Section 2.6(d) to the participating Lender. Each Lender that sells a participation agrees, at the Borrower's request and expense, to use reasonable efforts to cooperate with the Borrower to effectuate the provisions of Section 2.8 with respect to any Participant. Each Lender that sells a participation shall, acting solely for this purpose as an agent of the Borrower, maintain a register on which it enters the name and address of each Participant and the principal amounts (and stated interest) of each Participant's interest in the Loans or other obligations under the Loan Documents (the "Participant Register"); *provided*, *that*, no Lender shall have any obligation to disclose all or any portion of the Participant Register (including the identity of any Participant or any information relating to a Participant's interest in any commitments, loans or its other obligations under any Loan Document) to any Person except to the extent that such disclosure is necessary to establish that such commitment, loan or other obligation is in registered form under Section 5f.103-1(c) of the Treasury Regulations. The entries in the Participant Register shall be conclusive absent manifest error, and such Lender shall treat each Person whose name is recorded in the Participant Register as the owner of such participation for all purposes of this Agreement and the other Loan Documents notwithstanding any notice to the contrary. For the avoidance of doubt, the Collateral Agent (in its capacity as Collateral Agent) shall have no responsibility for maintaining a Participant Register.

(d) Notwithstanding anything to the contrary contained herein, the Lenders may grant to a special purpose funding vehicle identified as such in writing from time to time by the Lenders to the Borrower (an "SPC") the option to provide all or any part of the Loans that the Lenders would otherwise be obligated to make pursuant to this Agreement; *provided*, *that*, (i) nothing herein shall constitute a commitment by any SPC to fund the Loans, and (ii) if an SPC elects not to exercise such option or otherwise fails to make all or any part of the Loans, the Lenders shall be obligated to make the Loans pursuant to the terms hereof. Each party hereto hereby agrees that (i) neither the grant to any SPC nor the exercise by any SPC of such option shall increase the costs or expenses or otherwise increase or change the obligations of the Borrower under this Agreement, (ii) no SPC shall be liable for any indemnity or similar payment obligation under this Agreement for which the Lenders would be liable, and (iii) the Lenders shall for all purposes, including the approval of any amendment, waiver or other modification of any provision of any Loan Document, remain the lender of record hereunder. The making of the Loans by an SPC hereunder shall utilize the commitment of the Lenders to the same extent, and as if, such Loans were made by the Lenders. In furtherance of the foregoing, each party hereto hereby agrees (which agreement shall survive the termination of this Agreement) that, prior to the date that is one year and one day after the payment in full of all outstanding commercial paper or other senior debt of any SPC, it will not institute against, or join any other Person in instituting against, such SPC any bankruptcy, reorganization, arrangement, insolvency, or liquidation proceeding under the laws of the United States or any State thereof. Notwithstanding anything to the contrary contained herein, any SPC may (i) with notice to, but without prior consent of the Borrower, assign all or any portion of its right to receive payment with respect to the Loans to the Lenders and (ii) disclose on a confidential basis any non-public information relating to its funding the Loans to any rating agency, commercial paper dealer or provider of any surety or Guarantee or credit or liquidity enhancement to such SPC.

(e) The Lenders may at any time pledge or assign a security interest in all or any portion of their rights under this Agreement and the other Loan Documents to secure obligations of the Lenders, including any such pledge or assignment to a Federal Reserve Bank, and this Section 10.4 shall not apply to any such pledge or assignment of a security interest; *provided*, *that*, no such pledge or assignment of a security interest shall release the Lenders from any of their obligations hereunder or substitute any such assignee for the Lenders as a party hereto.

(f) The Lenders may furnish any information concerning any Credit Party or any Subsidiary in the possession of the Lenders from time to time to assignees and participants (including prospective assignees and participants) subject, however, to and so long as the recipient agrees in writing

to be bound by, the provisions of Section 10.13. In addition, the Lenders may furnish any information concerning any Credit Party, any Subsidiary or any Affiliate thereof in the Lenders' possession to any Affiliate of the Lenders, subject, however, to the provisions of Section 10.13. The Credit Parties shall assist the Lenders in effectuating any assignment or participation pursuant to this Section 10.4 in whatever manner the Lenders reasonably deem necessary.

(g) The Collateral Agent, acting solely for this purpose as a non-fiduciary agent of the Borrower (and such agency being solely for tax purposes), shall maintain a register for the recordation of the names and addresses of the Lenders, and the commitments of, and principal amounts (and stated interest) of the Loans owing to, each Lender pursuant to the terms hereof from time to time (the "Register"). The entries in the Register shall be conclusive absent manifest error, and the Borrower and the Lenders shall treat each Person whose name is recorded in the Register pursuant to the terms hereof as a Lender hereunder for all purposes of this Agreement. The Register shall be available for inspection by any Lender, at any reasonable time and from time to time upon reasonable prior notice.

10.5 Survival. All covenants, agreements, representations and warranties made by the Credit Parties herein and in the other Investment Documents, and in the certificates or other instruments delivered in connection with or pursuant to this Agreement and the other Investment Documents, shall be considered to have been relied upon by the other parties hereto and shall survive the execution and delivery of this Agreement and the other Investment Documents and the making of any Loans, regardless of any investigation made by any such other party or on its behalf and notwithstanding that the Lenders may have had notice or knowledge of any Default or incorrect representation or warranty at the time any credit is extended hereunder, and shall continue in full force and effect so long as the principal of or any accrued and unpaid interest on, or any Prepayment Premium with respect to, any Loans or any fee or any other Obligation payable under this Agreement or the other Investment Documents is outstanding and unpaid. The provisions of Sections 2.5, 2.6, 2.7 and 10.3 and the indemnity provisions of Section 10.1 shall survive and remain in full force and effect regardless of the consummation of the transactions contemplated hereby, the repayment of the Loans and all other Obligations hereunder or under any other Loan Document, the termination of any commitments hereunder, the resignation or replacement of the Collateral Agent, the assignment of rights by or the replacement of any Lender, the Maturity Date, or the termination of this Agreement or any other Investment Document or any provision hereof or thereof.

10.6 Counterparts; Integration; References to Agreement; Effectiveness. This Agreement and each other Investment Document may be executed in counterparts (and by different parties hereto on different counterparts), each of which shall constitute an original, but all of which when taken together shall constitute a single contract. Delivery of an executed counterpart of this Agreement or any other Investment Document by electronic mail or facsimile transmission shall be effective as delivery of a manually executed counterpart hereof. The Investment Documents and any separate letter agreements with respect to fees payable to the Collateral Agent, Lenders or their counsel constitute the entire contract among the parties relating to the subject matter hereof and supersede any and all previous agreements and understandings, oral or written, relating to the subject matter hereof. Whenever there is a reference in any Investment Document or UCC Financing Statement to the "Credit Agreement" to which the Lenders and the Credit Parties are parties, such reference shall be deemed to be made to this Agreement among the parties hereto. Except as provided in Section 6.1, this Agreement shall become effective when it shall have been executed by the Lenders and when the Lenders shall have received counterparts hereof which, when taken together, bear the signatures of each of the other parties hereto, and thereafter shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.

10.7 Severability. Any provision of this Agreement or any other Loan Document held to be invalid, illegal or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such invalidity, illegality or unenforceability without affecting the validity, legality and

enforceability of the remaining provisions hereof; and the invalidity, illegality or unenforceability of a particular provision in a particular jurisdiction shall not invalidate such provision in any other jurisdiction. In such event, the parties hereto or to such other Loan Document, as applicable, shall endeavor in good faith negotiations to replace the invalid, illegal or unenforceable provisions with valid provisions the economic effect of which comes as close as possible to that of the invalid, illegal or unenforceable provisions.

10.8 Right of Setoff. Each Credit Party hereby grants to any Lenders that holds any funds or otherwise becomes indebted to the Credit Parties a security interest in all deposits (general or special, time or demand, provisional or final) and funds at any time held and other indebtedness at any time owing by the Lenders to or for the credit or the account of any Credit Party as security for the Obligations, and the Credit Parties hereby agree that if an Event of Default shall have occurred and be continuing, the Lenders are hereby authorized at any time and from time to time, to the fullest extent permitted by law, to set off and apply any and all deposits (general or special, time or demand, provisional or final) or other funds at any time held and other indebtedness at any time owing by the Lenders to or for the credit or the account of any Credit Party against any and all of the Obligations, irrespective of whether or not the Lenders shall have made any demand under this Agreement and although any of the Obligations may be unmatured. The rights of the Lenders under this Section 10.8 are in addition to any other rights and remedies (including other rights of setoff) which the Lenders may have.

10.9 Subordination by Credit Parties. The Credit Parties hereby agree that all present and future Indebtedness of any Credit Party to another Credit Party ("Intercompany Indebtedness") shall be subordinate and junior in right of payment and priority to the Obligations, and if an Event of Default shall have occurred and be continuing and the Borrower has received notice from the Collateral Agent of its intention to exercise its rights hereunder (unless such Event of Default is pursuant to Sections 9.1 (a), (g), (h) or (i), in which case no notice shall be required), each Credit Party agrees not to make, demand, accept or receive any payment in respect of any present or future Intercompany Indebtedness, including, without limitation, any payment received through the exercise of any right of setoff, counterclaim or cross claim, or any collateral therefor, unless and until such time as the Obligations shall have been indefeasibly paid in full. Without in any way limiting the foregoing, in the event of any insolvency or bankruptcy proceedings, or any receivership, liquidation, reorganization, dissolution or other similar proceedings relative to any Credit Party or to its businesses, properties or assets, the Lenders shall be entitled to receive payment in full of all of the Obligations before any Credit Party shall be entitled to receive any payment in respect of any present or future Intercompany Indebtedness.

10.10 Governing Law; Jurisdiction; Consent to Service of Process.

(a) This Agreement and each other Loan Document (except, as to any other Loan Document, as expressly set forth therein) and any claims, controversy, dispute or cause of action (whether in contract or tort or otherwise) based upon, arising out of or relating to this Agreement or any other Loan Document (except, as to any other Loan Document, as expressly set forth therein) and the transactions contemplated hereby and thereby shall be construed in accordance with and governed by the law of the State of New York without giving effect to any choice or conflict of law provision or rule that would cause the application of the domestic substantive laws of any other state.

(b) Each party hereto hereby irrevocably and unconditionally submits, for itself and its property, to the nonexclusive jurisdiction of the United States District Court for the Southern District of New York and of the Supreme Court of the State of New York sitting in New York County (including its appellate division), and of any other appellate court in the State of New York, in any action or proceeding arising out of or relating to this Agreement or the other Loan Documents or the transactions relating hereto or thereto, or for recognition or enforcement of any judgment, and each of the parties

hereto hereby irrevocably and unconditionally agrees that all claims in respect of any such action or proceeding may be heard and determined in such New York court (or, to the extent permitted by law, in such Federal court). Each of the parties hereto agrees that a final judgment in any such action or proceeding shall be conclusive and may be enforced in other jurisdictions by suit on the judgment or in any other manner provided by law. Nothing in this Agreement or in any other Loan Document shall affect any right that the Lenders may otherwise have to bring any action or proceeding relating to this Agreement against any Credit Party or its properties in the courts of any jurisdiction.

(c) Each party hereto hereby irrevocably and unconditionally waives, to the fullest extent it may legally and effectively do so, any objection which it may now or hereafter have to the laying of venue of any suit, action or proceeding arising out of or relating to this Agreement or the other Loan Documents in any court referred to in paragraph (b) of this Section 10.10. Each of the parties hereto hereby irrevocably waives, to the fullest extent permitted by law, the defense of an inconvenient forum to the maintenance of such action or proceeding in any such court.

(d) Each party to this Agreement irrevocably consents to service of process in the manner provided for notices in Section 10.1. Nothing in this Agreement will affect the right of any party to this Agreement to serve process in any other manner permitted by law.

10.11 WAIVER OF JURY TRIAL. EACH PARTY HERETO HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN ANY LEGAL PROCEEDING DIRECTLY OR INDIRECTLY ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE OTHER LOAN DOCUMENTS OR THE TRANSACTIONS CONTEMPLATED HEREBY OR THEREBY (WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY). EACH PARTY HERETO (A) CERTIFIES THAT NO REPRESENTATIVE, AGENT OR ATTORNEY OF ANY OTHER PARTY HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PARTY WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE THE FOREGOING WAIVER AND (B) ACKNOWLEDGES THAT IT AND THE OTHER PARTIES HERETO HAVE BEEN INDUCED TO ENTER INTO THIS AGREEMENT AND THE OTHER LOAN DOCUMENTS BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION 10.11.

10.12 Headings. Article and Section headings and the Table of Contents used herein are for convenience of reference only, are not part of this Agreement and shall not affect the construction of, or be taken into consideration in interpreting, this Agreement.

10.13 Confidentiality. Each Lender agrees to keep confidential information obtained by it pursuant hereto and the other Loan Documents confidential in accordance with such Lender's customary practices and agrees that it will only use such information in connection with the transactions contemplated by this Agreement and not disclose any of such information other than (a) to such Lender's partners, employees, representatives, directors, attorneys, auditors, agents, advisors, sub-advisors, trustees or Affiliates who are advised of the confidential nature of such information or to any direct or indirect contractual counterparty in swap agreements or such contractual counterparty's professional advisor (so long as such contractual counterparty or professional advisor to such contractual counterparty agrees to be bound by the provisions of this Section 10.13), (b) to the extent such information presently is or hereafter becomes available to the Lenders on a non-confidential basis from any source of such information that is in the public domain at the time of disclosure, (c) to the extent disclosure is required by law (including applicable securities law), regulation, subpoena or judicial order or process (*provided*, *that*, notice of such requirement or order shall be promptly furnished to the Borrower unless such notice is legally prohibited) or requested or required by bank, securities, insurance or investment company regulators or auditors or any administrative body or commission to whose jurisdiction the Lenders may be subject, (d) to assignees

or participants or prospective assignees or participants who agree to be bound by the provisions of this Section 10.13, (e) to the extent required in connection with any litigation between any Credit Party and/or any Subsidiary, on the one hand, and the Collateral Agent and/or any Lender(s), on the other hand, with respect to the Loans or this Agreement and the other Loan Documents or (f) with the Borrower's prior written consent.

10.14 Requirements of the Lenders under the USA Patriot Act of 2001. The Lenders and the Collateral Agent hereby notify the Borrower that pursuant to the requirements of the USA Patriot Act of 2001, they are required to obtain, verify and record information that identifies each Credit Party, which information includes the name and address of each Credit Party and other information that will allow such Lenders to identify the Credit Parties in accordance with the USA Patriot Act of 2001, and the Borrower agrees to provide such documentation or other information from time to time that any Lender or the Collateral Agent requests in order to comply with its ongoing obligations under the applicable "know your customer" and anti-money laundering rules and regulations, including the USA Patriot Act of 2001.

10.15 Interest Rate Limitation. Notwithstanding anything to the contrary contained in any Loan Document, the interest paid or agreed to be paid under the Loan Documents shall not exceed the maximum rate of non-usurious interest permitted by applicable law (the "Maximum Rate"). If any Lender shall receive interest in an amount that exceeds the Maximum Rate, the excess interest shall be applied to the principal of the Loans or, if it exceeds such unpaid principal, refunded to the Borrower. In determining whether the interest contracted for, charged, or received by a Lender exceeds the Maximum Rate, such Person may, to the extent permitted by applicable law and in consultation with the Borrower, (a) characterize any payment that is not principal as an expense, fee, or premium rather than interest, (b) exclude voluntary prepayments and the effects thereof, and (c) amortize, prorate, allocate, and spread in equal or unequal parts the total amount of interest throughout the contemplated term of the Obligations hereunder.

10.16 Electronic Execution. The words "delivery," "execute," "execution," "signed," "signature," and words of like import in any Investment Document or any other document executed in connection herewith shall be deemed to include electronic signatures, the electronic matching of assignment terms and contract formations on electronic platforms approved by the Lenders, or the keeping of records in electronic form, each of which shall be of the same legal effect, validity or enforceability as a manually executed signature, physical delivery thereof or the use of a paper-based recordkeeping system, as the case may be, to the extent and as provided for in any applicable law, including the Federal Electronic Signatures in Global and National Commerce Act, the New York State Electronic Signatures and Records Act, or any other similar state laws based on the Uniform Electronic Transactions Act; *provided*, *that*, notwithstanding anything contained herein to the contrary the Lenders are under no obligation to agree to accept electronic signatures in any form or in any format unless expressly agreed to by such Lender pursuant to procedures approved by it; *provided*, *further*, *that*, without limiting the foregoing, upon the request of any Lender, any electronic signature shall be promptly followed by such manually executed counterpart.

ARTICLE 11
COLLATERAL AGENT

11.1 Appointment; Duties; Indemnification.

(a) Each Lender hereby irrevocably appoints AOF III Co-Invest as its agent (in such capacity, the "Collateral Agent") and authorizes the Collateral Agent to take such actions on its behalf in respect of the Collateral, including the perfection and maintenance of the Collateral, and to exercise such powers as are or may be delegated by each Lender to the Collateral Agent from time to time, together

with such actions and powers as are reasonably incidental thereto. The Collateral Agent may, and each Lender authorizes the Collateral Agent to, enter into all Loan Documents to which the Collateral Agent is intended to be a party, for the Collateral Agent's benefit and the Pro Rata benefit of the Lenders, to take all actions with respect to the Collateral as set forth herein, including all actions necessary for the perfection of the Liens granted hereunder, such as filing financing statements, taking of possession of any Collateral and entering into any control agreements. If any Lender obtains possession of any Collateral a Lien on which can be perfected by possession, it shall notify the Collateral Agent thereof and, promptly upon the Collateral Agent's request, deliver such Collateral to the Collateral Agent or otherwise deal with such Collateral in accordance with the Collateral Agent's instructions.

(b) The Collateral Agent may perform any and all of its duties and exercise its rights and powers by or through any one or more sub-agents appointed by the Collateral Agent from time to time. The Collateral Agent and any such sub-agent may perform any and all its duties and exercise its rights and powers through their respective affiliates.

(c) Subject to the appointment and acceptance of a successor Collateral Agent as provided in this paragraph, the Collateral Agent may resign at any time by notifying each Lender and the Borrower. Upon any such resignation, the Lenders shall have the right, in consultation with the Borrower, to appoint a successor. If a successor has not been so appointed by the Lenders or, if appointed, has not accepted such appointment within thirty (30) days after the retiring Collateral Agent gives notice of its resignation, then the retiring Collateral Agent may, on behalf of the Lenders, appoint a successor Collateral Agent. Upon the acceptance of its appointment as Collateral Agent hereunder by a successor, such successor shall succeed to and become vested with all the rights, powers, privileges, obligations and duties of the retiring Collateral Agent, and the retiring Collateral Agent shall be discharged from its duties and obligations hereunder. After the Collateral Agent's resignation hereunder, the provisions of this Section 11.1 shall continue in effect for the benefit of such retiring Collateral Agent, its sub-agents and their respective affiliates in respect of any actions taken or omitted to be taken by any of them while it was acting as Collateral Agent.

(d) The Borrower hereby agrees to indemnify the Collateral Agent in its capacity as such for any and all liabilities, obligations, losses, damages, penalties, actions, judgments, suits, costs, expenses or disbursements of any kind and nature whatsoever that may be imposed on, incurred by or asserted against the Collateral Agent in any way relating to or arising out of the Collateral, the Loan Documents or the transactions contemplated hereby or thereby or the enforcement of any of the terms hereof or thereof or of any such other documents or instruments, including, without limitation, the reasonable and documented out-of-pocket fees and disbursements of counsel incurred in connection therewith; *provided*, *that*, the Borrower shall not be liable for any of the foregoing to the extent they arise from the bad faith, gross negligence or willful misconduct of the Collateral Agent, in each case as determined in a final and non-appealable judgment by a court of competent jurisdiction.

[The remainder of this page is intentionally left blank.]

IN WITNESS WHEREOF, the parties hereto have caused this Credit and Security Agreement to be duly executed by their respective authorized officers as of the day and year first above written.

BORROWER:

PROGENITY, INC.

By: /s/ Eric Fox
Name: Eric Fox
Title: Vice President of Finance and Accounting and Treasurer

GUARANTORS:

AVERO LABORATORY HOLDINGS LLC

By: /s/ Eric Fox
Name: Eric Fox
Title: Vice President of Finance and Accounting and Treasurer

MOLECULAR DIAGNOSTIC HEALTH SCIENCES, LLC

By: /s/ Eric Fox
Name: Eric Fox
Title: Vice President of Finance and Accounting and Treasurer

PROGENITY HOLDING COMPANY, INC.

By: /s/ Eric Fox
Name: Eric Fox
Title: Vice President of Finance and Accounting and Treasurer

SPX3, INC.

By: /s/ Eric Fox
Name: Eric Fox
Title: Vice President of Finance and Accounting and Treasurer

COLLATERAL AGENT:

ATHYRIUM OPPORTUNITIES III CO-INVEST 1 LP, as a Lender

By: ATHYRIUM OPPORTUNITIES ASSOCIATES CO-INVEST LLC,
its General Partner

By: /s/ Andrew C. Hyman
Name: Andrew C. Hyman
Title: Authorized Signatory

LENDERS:

ATHYRIUM OPPORTUNITIES III CO-INVEST 1 LP,
as a Lender

By: ATHYRIUM OPPORTUNITIES ASSOCIATES CO-INVEST LLC,
its General Partner

By: /s/ Andrew C. Hyman
Name: Andrew C. Hyman
Title: Authorized Signatory

Exhibit 21.1

Subsidiaries of Progenity, Inc.

1. SPX3, Inc., a Delaware corporation
2. Molecular Diagnostic Health Sciences, LLC, a Delaware limited liability company
3. Progenity Holding Company, Inc., a Delaware corporation
4. Avero Laboratory Holdings LLC, a Delaware limited liability company