UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2016

Or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission file number 001-35817

CANCER GENETICS, INC.
(Exact name of registrant as specified in its charter)

Delaware	**04-3462475**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

201 Route 17 North 2nd Floor
Rutherford, NJ 07070
(201) 528-9200
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Name of each exchange on which registered
Common Stock, $0.0001 par value per share	**NASDAQ Capital Market**

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes: ☐ No: ☒

Indicate by check mark if the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes: ☒ No: ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Website; if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes: ☒ No: ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☒

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

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☐ (do not check if a smaller reporting company)	Smaller reporting company	☒

Indicate by check mark if the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes: ☐ No: ☒

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant was $27 million on June 30, 2016, the last business day of the registrant's most recently completed second fiscal quarter, based on the closing price of $1.99 on that date.

Indicate the number of shares outstanding of each of the registrant's classes of common equity, as of March 1, 2017:

Class	Number of Shares
Common Stock, $.0001 par value	**18,935,594**

Documents incorporated by reference

Portions of the registrant's proxy statement for the 2017 annual meeting of stockholders to be filed pursuant to Regulation 14A within 120 days after the registrant's fiscal year ended December 31, 2016, are incorporated by reference in Part III of this Form 10-K.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This report contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include all statements that are not historical facts. In some cases, you can identify forward-looking statements by terms such as "may," "will," "should," "could," "would," "expects," "plans," "anticipates," "believes," "estimates," "projects," "predicts," "potential," or the negative of those terms, and similar expressions and comparable terminology intended to identify forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties including those set forth below and under Part I, Item 1A, "Risk Factors" in this annual report on Form 10-K. Given these uncertainties, you should not place undue reliance on these forward-looking statements. These forward-looking statements represent our estimates and assumptions only as of the date of this annual report on Form 10-K and, except as required by law, we undertake no obligation to update or review publicly any forward-looking statements, whether as a result of new information, future events or otherwise after the date of this annual report on Form 10-K. You should read this annual report on Form 10-K and the documents referenced in this annual report on Form 10-K and filed as exhibits completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of our forward-looking statements by these cautionary statements. Such statements may include, but are not limited to, statements concerning the following:

- our ability to achieve profitability by increasing sales of our laboratory tests and services and to continually develop and commercialize novel and innovative diagnostic tests and services for cancer patients;
- our ability to raise additional capital to meet our liquidity needs;
- our ability to clinically validate our pipeline of genomic microarray tests currently in development;
- our ability to execute on our marketing and sales strategy for our genomic tests and gain acceptance of our tests in the market;
- our ability to develop new tests and keep pace with rapidly advancing market and scientific developments;
- our ability to satisfy U.S. (including FDA) and international regulatory requirements with respect to our tests and services, many of which are new and still evolving;
- our ability to obtain reimbursement from governmental and other third-party payors for our tests and services;
- competition from clinical laboratory services companies, diagnostic tests currently available or new tests that may emerge;
- our ability to maintain our clinical collaborations and enter into new collaboration agreements with highly regarded organizations in the cancer field so that, among other things, we have access to thought leaders in the field and to a robust number of samples to validate our tests;
- our reliance on a limited number of customers and our ability to maintain our present customer base and obtain new customers;
- potential product liability or intellectual property infringement claims;
- our reliance on a limited number of suppliers for components for our tests;
- our dependency on third-party manufacturers to supply or manufacture our tests;
- our ability to attract and retain a sufficient number of scientists, clinicians, sales personnel and other key personnel with extensive experience in oncology, who are in short supply;
- our ability to obtain or maintain patents or other appropriate protection for the intellectual property in our proprietary tests and services;
- our dependency on the intellectual property licensed to us or possessed by third parties;
- our ability to expand our relationships with leading distributors and medical facilities in emerging markets;
- our ability to adequately support future growth.

PART I

Item 1. Business.

Overview

We are an emerging leader in the field of precision medicine, enabling individualized therapies in the field of oncology through our diagnostic products and services and molecular markers. We develop, commercialize and provide molecular- and biomarker-based tests and services that enable physicians to personalize the clinical management of each individual patient by providing genomic information to better diagnose, monitor and inform cancer treatment and that enable biotech and pharmaceutical companies engaged in oncology trials to better select candidate populations and reduce adverse drug reactions by providing information regarding genomic factors influencing subject responses to therapeutics. We have a comprehensive, disease-focused oncology testing portfolio. Our tests and techniques target a wide range of cancers, covering nine of the top ten cancers in prevalence in the United States, with additional unique capabilities offered by our FDA-cleared Tissue of Origin® test for identifying difficult to diagnose tumor types or poorly differentiated metastatic disease.

Our vision is to become the oncology diagnostics partner for pharmaceutical and biotech companies and clinicians by participating in the entire care continuum from bench to bedside. We believe the oncology industry is undergoing a rapid evolution in its approach to diagnostic, prognostic and treatment outcomes (theranostic) testing, embracing precision medicine and individualized testing as a means to drive higher standards of patient treatment and disease management. Similarly, pharmaceutical and biotech companies are increasingly working with precision diagnostic and molecular technology providers such as CGI to provide molecular profiles on clinical trial participants. These profiles may help identify biomarker and genomic variations that may be responsible for differing responses to oncology therapies, thereby increasing the efficiency of trials while lowering costs. We believe tailored and combination therapies can revolutionize oncology care through molecular- and biomarker-based testing services, enabling physicians and researchers to target the factors that make each patient and disease unique.

We believe the next wave in cancer management will bring together testing capabilities for germline, or inherited mutations, and somatic mutations that arise in tissues over the course of a lifetime. We have created a unique position in the industry by providing both targeted somatic analysis of tumor sample cells alongside germline analysis of an individual's non-cancerous cells' molecular profile as we attempt to continue achieving milestones in precision medicine.

Cancer is genetically-driven and constitutes a diverse class of diseases with various causes, each characterized by uncontrollable cell growth. Many cancers are becoming increasingly understood at a molecular level and it is possible to attribute specific cancers to identifiable genetic changes in unhealthy cells. Cancer cells contain modified genetic material compared to normal human cells. Common genetic abnormalities correlated to cancer include gains or losses of genetic material on specific chromosomal regions (loci) or changes in specific genes (mutations) that ultimately result in detrimental cellular changes followed by cancerous or pre-cancerous conditions. Understanding the differences in these molecular changes helps clinicians to identify and stratify different forms of cancer in order to optimize patient treatment and patient management. Therefore, understanding and analysis of cancer at the molecular level is not only useful for diagnostic purposes, but we also believe it can play an important role in prognosis and disease management. We believe technology that can apply predictive information has the potential to dramatically improve treatment outcomes for patients living with cancer. Our molecular- and biomarker-based tests for cancer aim to remove subjectivity from the diagnostic phase, and add prognostic information, thus enabling personalized treatments based on cancer analysis at its most basic level.

Our business is based on demand for molecular- and biomarker-based diagnostic services from three main sectors, including cancer centers and hospitals, biotechnology and pharmaceutical companies, and the research community. Clinicians and oncologists in cancer centers and hospitals seek testing since these methods often produce higher value and more accurate cancer diagnostic information than traditional analytical methods. Our proprietary and disease-focused tests aim to provide actionable information that can guide patient management decisions, potentially resulting in decreased costs for care providers and patients while streamlining therapy selection. Our services are also sought by biotechnology and pharmaceutical companies engaged in designing and running clinical trials to determine the value and efficacy of oncology treatments and therapeutics. We believe trial participants' likelihood of experiencing either favorable or adverse responses to the trial treatment may be influenced or dependent on genomic factors. Our testing services may increase trial efficiency, subject safety and trial success rates. Our services are also sought by researchers and research groups seeking to identify biomarkers and develop methods for diagnostic technologies and tests for disease. We aggressively pursue the strategy of trying to demonstrate increased value and efficacy with payors who are trying to contain costs and academic collaborators seeking to develop new insights and cures.

Our market strategy is organized to align with the three aforementioned industry segments. We utilize relatively the same

technologies across each of these businesses to deliver results-oriented information which we believe is or will become important to cancer treatment and patient management. Our tests address the limitations of traditional cancer diagnostic approaches, including reliance on human inspection of specimens and interpretation of clinical measurements, and inter-institutional variability. Our suite of clinical and biopharma services aim to remove subjectivity from diagnoses and additionally provide information that may influence treatment selection that cannot be obtained from anatomic pathology and staining techniques alone. We believe the level of personalized treatment required to optimize a patient's treatment regimen and to maximize clinical trial success rates may be significantly improved through the use of molecular- and biomarker-based cancer characterization.

The following table lists our market strategy by customer category:

Customer Category	Types of Customers	Nature of Services
Clinical Services	• Hospitals • Cancer Centers • Clinics	Clinical services provide information on diagnosis, prognosis and predicting treatment outcomes (theranosis) of cancers to guide patient management.
Biopharma Services	• Pharmaceutical and Biotech companies performing clinical trials	Biopharma services provide companies with customized solutions for patient stratification and treatment selection through an extensive suite of molecular- and biomarker-based testing services, customized assay development and trial design consultation.
Discovery Services	• Pharmaceutical and Biotech companies • Academic Institutions • Government-Sponsored Research Institutions	Discovery services provide the tools and testing methods for companies and researchers seeking to identify new molecular-based biomarkers for disease.

In 2016, we generated approximately 57% of our revenue from Biopharma Services, approximately 39% from Clinical Services and approximately 4% from Discovery Services. In 2015, we generated approximately 64% of our revenue from Biopharma Services, approximately 31% from Clinical Services and approximately 5% from Discovery Services.

We utilize relatively the same proprietary and nonproprietary molecular diagnostic tests and technologies across all of our service offerings to deliver results-oriented information important to cancer treatment and patient management. Our portfolio primarily includes comparative genomic hybridization (CGH) microarrays, gene expression tests, next generation sequencing (NGS) panels, and DNA fluorescent *in situ* hybridization (FISH) probes. We provide our testing services from our Clinical Laboratory Improvement Amendments (“CLIA”) - certified and College of American Pathologists (“CAP”) - accredited laboratories in Rutherford, NJ, Los Angeles, CA, and Raleigh, NC, as well as our NABL and GMP-certified laboratories in Hyderabad, India and Shanghai, China.

Market Overview

United States Clinical Oncology Market Overview

Despite many advances in the treatment of cancer, it remains one of the greatest areas of unmet medical need. In 2015, the World Health Organization attributed 8.8 million deaths (16% of all deaths) worldwide to cancer-related causes, and projects that over the next two decades the number of new cancer cases will rise to approximately 23 million by the year 2032. Within the United States, cancer is the second most common cause of death, exceeded only by heart disease, accounting for nearly one out of every four deaths. The incidence and deaths caused by the major cancer categories are staggering. The following table published by The American Cancer Society shows estimated new cases and deaths in 2016 in the United States for selected major cancer types:

Cancer Type	Estimated New Cases For 2016	Estimated Deaths For 2016
Breast	249,260	40,890
Cervical	12,990	4,120
Colorectal	134,490	49,190
Endometrial	60,050	10,470
Kidney	62,700	14,240
Leukemia	60,140	24,400
Lung	224,390	158,080
Melanoma	76,380	10,130
Multiple Myeloma	28,170	11,500
Non-Hodgkin's Lymphomas	72,580	20,150
Ovarian	22,280	14,240
Pancreatic	53,070	41,780
Prostate	180,890	26,120

United States Clinical Trials Market Overview

The United States is currently a world leader in biopharmaceutical research and development and manufacturing. In Fiscal Year 2016, the National Cancer Institute received a budget of $5.21 billion, an increase of $260.5 million over FY 2015, to issue grants to address health care disparities, support research, and conduct oncology clinical trials. The Pharmaceutical Research and Manufactures of America (PhRMA) reports that the average cost to develop a drug, including trial failures, can be as high as $2.6 billion and the approval process from development to market may be as long as 15 years. According to the National Cancer Institute, since the 1990s, cancer death rates have declined 23%, and approximately 83% of life expectancy increases in cancer patients are due to new treatments and oncology medications.

While oncology drugs have the potential to be among the most personalized therapeutics, oncology clinical trials continue to have some of the poorest approval rates. The application of pharmacogenomics to oncology clinical trials enables researchers to better predict differences in drug response, efficacy and toxicity among trial participants, as well as to optimize treatment regimens based on these differences. According to IMS Health, it is estimated that by 2020, half of all pharmaceutical sales in the United States will be from specialty drugs, a category of drugs including oncology treatments tailored to patients' genomic profiles. A study by Grand Market Research places the oncology market at 34% of revenue for molecular diagnostics services in 2013, with the pharmacogenomics market following closely at 26.3%. Pharmacogenomics is the study of genetic analysis based on a patient's response to a particular therapy or drug. We believe a growing demand for faster development of personalized medicines and more effective clinical trials are growth drivers of this market.

India Clinical Oncology and Biopharma Market Overview

India has a growing market for molecular diagnostics and oncology services. According to a report published by Ernst and Young, approximately 1.1 million new cases of cancer were officially reported, and as many as 2.2 million new cases were estimated, in India in 2015. In those cancer types for which we provide diagnostic and prognostic proprietary tests and services, incidences are also predicted to rise steadily over the next decade even while the population is expected to experience a decrease in population growth rate. Gynecological cancers account for approximately 12% of the total cancer incidence among the Indian population, and 30% of the cancer incidence among women. Furthermore, 70-80% of cancers in India are first detected in advanced or terminal stages, indicating an important opportunity in this market for DNA-based oncology diagnostic tools that can provide early-stage information to guide treatment resulting in greater survival rates.

It is estimated by the India Brand Equity Foundation that the Indian biotech and pharmaceutical markets are expected to experience over a 30% increase in compound annual growth rate by 2025 due to favorable business conditions and increasing government expenditures in these sectors. The biopharmaceutical services segment accounted for the largest share of sector growth in 2013 and 2014, accounting for approximately 64% of total revenues, and experienced the highest growth rate in this period, with an approximately 18% compound annual growth rate. Over the next decade, growth in this industry is anticipated to come largely from India's strong position in biosimilar and molecular diagnostics, as well as from personalized medicine. The Indian government has been increasing spending on the biotech and pharmaceutical sectors through 5-year budget allocation plans aimed at research and development as well as health care.

China Clinical Oncology and Biopharma Market Overview

The Chinese biopharma market is currently the third largest pharma market globally, after the United States and Japan. With more than one fifth of the world's population, China is an important market for pharmaceutical and biotech products and China's minister of health has pledged that the country will spend an additional $11.8 billion to advance biotech innovation from 2015 to 2020 in its 13th five-year plan. Cancer is one of the leading public health problems in China, representing approximately 25% of all deaths in urban areas and 21% in rural areas. Over the past 30 years, the risk factors for cancer in China have been increasing, including an aging population, decreased environmental conditions and westernization of diet and lifestyle. Our Shanghai laboratory performs clinical trials services for biotech and pharmaceutical companies in China, where governmental regulations prevent human samples from being exported from the country.

Our Strategy

We are focused on delivering our comprehensive cancer profiling and state of the art molecular diagnostic capabilities to a diverse group of market participants, including:

- Biotechnology companies;
- Pharmaceutical companies;
- Cancer centers;
- Community hospitals; and
- Research centers

All of these participants require biomarker-based assessment of cancer and biomarker-based information to understand and manage the patient, their cancer and customized therapy choices. We believe that our integrated approach to testing combined with our ability to rapidly translate research insights about the genetics and molecular mechanisms of cancer into the clinical setting will improve patient treatment decision-making, and will become a key component in the standard of care for personalized cancer treatment. Our approach is to develop and commercialize proprietary molecular and biomarker-based tests and services to enable us to provide a full service solution to improve the diagnosis, prognosis and treatment of targeted cancers and to better predict differences in drug response, efficacy and toxicity among clinical trial participants, as well as to optimize treatment regimens based on these differences. To achieve this, we intend to:

- *Leverage our specialized, disease-focused genomic knowledge, insights and proprietary portfolio to secure additional collaborations or partnerships with leading biotech and pharmaceutical companies and clinical research organizations.* Oncology drugs have the potential to be among the most personalized of therapeutics, and yet oncology trials have one of the worst approval success rates. In an effort to improve the outcome of these trials, and more rapidly advance targeted therapeutics, the biotechnology and pharmaceutical community is increasingly looking to companies like us that have both proprietary disease insights and comprehensive testing services as they move toward biomarker-based therapeutics. We believe our comprehensive, disease-focused testing portfolio, which covers 9 of the 10 most prevalent solid and hematological cancers positions us to help the biotech and pharmaceutical community with clinical trials and companion diagnostic development in areas of our core expertise.

- *Leverage our expanded clinical sales force and our relationships with global central laboratories to expand our customer base.* We believe that our joint clinical sales force is among the largest oncology-focused clinical sales groups in the molecular diagnostics field. By leveraging our clinical and biopharma sales force in the United States, along with our relationships with international central laboratories and clinical research organizations, we are able to target our sales and marketing efforts to meet the needs of an expanding and diverse customer segment. In mid-2015 and 2016, we entered into a strategic alliance with the laboratory services group of ICON plc, and with BARC Global Central Laboratory, a division of Cerba HealthCare, each a global contract research organization ("CRO"), which we are leveraging to expand our biopharma customer base.

- C*ontinue our focus on translational oncology and drive innovation and cost efficiency in diagnostics by continuing to develop next generation sequencing offerings independently and through our joint venture with Mayo Clinic.* Translational oncology refers to our focus on bringing novel research insights that characterize cancer at the genomic level directly and rapidly into the clinical setting with the overall goal of improving value to patients and providers in the treatment and management of disease. We believe that continuing to develop our existing platforms and next generation sequencing panels will enable significant growth and efficiencies within our business. We will continue to develop next generation sequencing panels independently as well as leverage our joint venture with Mayo Clinic to advance this diagnostic technology.

- *Work with health care providers and payors to demonstrate the value of our testing in providing cost efficient and accountable care.* We seek to increase market access by entering into contracts with key payors, cost management organizations and insurance providers and to secure additional coverage for FHACT®, TOO® and Focus::NGS® panels.

- *Continue to aggressively manage our cost structure.* We are focused on aggressively managing our operating costs while continuing to seek additional revenue growth opportunities. We are implementing measures to streamline costs across our laboratory facilities, including integrating administrative functions across our US and India operations and implementing key financial enterprise resource planning and human resource systems that enable greater efficiency.

Our Service Offerings

Our business is based on demand for molecular- and biomarker-based characterization of cancers from three main sectors: cancer centers and hospitals, biotechnology and pharmaceutical companies, and the research community. Clinicians and oncologists in cancer centers and hospitals seek molecular-based testing since these methods often produce higher value and more accurate cancer diagnostic information than traditional analytical methods. Our proprietary and disease-focused tests aim to provide actionable information that can guide patient management decisions, potentially resulting in decreased costs for care providers and patients while streamlining therapy selection. Our services are also sought by biotechnology and pharmaceutical companies engaged in designing and running clinical trials for their value and efficacy in oncology treatments and therapeutics. We believe trial participants' likelihood of experiencing either favorable or adverse responses to the trial treatment can be determined by biomarker testing, thereby increasing trial efficiency, participant safety and trial success rates. Our services are also sought by researchers and research groups seeking to identify biomarkers and panels and develop methods for diagnostic technologies and tests for disease. We aggressively pursue the strategy of trying to demonstrate increased value and efficacy with payors who are trying to contain costs and academic collaborators seeking to develop new insights and cures.

Our market strategy is organized to align with the three aforementioned industry segments. We utilize relatively the same proprietary tests, non-proprietary test and technologies across each of these businesses to deliver results-oriented information important to cancer treatment and patient management.

Clinical Services

We provide our proprietary tests and services, along with a comprehensive range of non-proprietary oncology-focused tests and laboratory services, to oncologists and pathologists at hospitals, cancer centers, and physician offices. Our proprietary tests target cancers that are difficult to prognose and predict treatment outcomes through currently available mainstream techniques. We utilize an expansive range of non-proprietary test and technologies to provide a comprehensive profile for each patient we serve. Clinical testing is available through anatomic pathology, flow cytometry, karotype, FISH, liquid biopsy and molecular diagnostics (including next generation sequencing and gene expression panels).

Our comprehensive oncology-focused testing services for cancer are utilized in the diagnosis, prognosis and prediction of treatment outcomes (theranosis) of cancer patients and are growing rapidly as clinicians demand more precise and more comprehensive diagnostic evaluation of their patients. We believe our ability to rapidly translate research insights about the genetics and molecular mechanisms of cancer into the clinical setting will improve patient treatment and management and that this approach can become a key component in the standard of care for personalized cancer treatment. We utilize highly skilled scientists, pathologists and hematologists in our laboratories, with 46% of individuals holding advanced degrees. These individuals assist our customers in integrating and technically assessing the testing results for their patients.

We believe that our proprietary tests provide superior diagnostic and prognostic values than other currently available tests and services. For example, prior to the introduction of MatBA®, the assessment of the gain or loss on only four chromosomal regions and potentially one gene mutation was available to clinicians when testing for and stratifying a CLL patient. MatBA® improves on this by identifying information on a total of twenty chromosomal regions, providing more valuable diagnostic data and critical information about the risk of progression and overall prognosis of the patient. For particular cases, patient results indicating a “favorable outcome” that would have been reported to the clinician was determined by MatBA® to be inaccurate, leading to a change in the prognosis and consequently decision-making by the clinician regarding the management of these patients.

Our clinical services strategy is focused on direct sales to oncologists and pathologists at hospitals, cancer centers, and physician offices in the United States, and expanding our relationships with leading distributors and medical facilities in emerging markets. As part of our market strategy for our clinical services, we offer the branded testing programs described below.

Complete™ Program. Our Complete™ program is our branded program offering a unique suite of common and proprietary tests that assist clinicians in determining the best treatment options to improve patient outcomes. Each Complete™ program integrates the latest diagnostic and prognostic biomarkers across multiple testing methodologies. We offer Complete testing for a number of hematological cancers and solid tumors, including AML, CLL, DLBCL, MDS, myeloproliferative neoplasms (MPN), colorectal, lung and breast cancers.

Expand DX™/Technical-Only Testing. According to the American Hospital Association, there are nearly 5,000 community hospitals in the United States. Community hospitals represent a large target market for our genomic tests and services because approximately 85% of cancer patients in the United States are initially diagnosed in such hospitals as reported to the National Cancer Database. Our Expand DX™/Technical-Only Testing program is a partnership initiative offered by us to help community-based hospitals expand their clinical services. By partnering with us community-based hospitals and pathology labs have cost-effective access to advanced testing technologies and specialized testing capabilities and deep experience in hematological and solid-tumor oncology diagnostics of our clinical reference laboratories in New Jersey and California. Through this program, clinicians can send patient specimens to our laboratories, where the technical component of the testing is performed, and then access the test results through an online portal in order to perform the professional component and provide a diagnosis. We believe our Expand DX™/Technical-Only Testing program will enable community hospitals and pathology laboratories to optimize and expand their oncology services to better serve their cancer patients and reduce costs associated with cancer care.

Tissue of Origin® Test. Our FDA-cleared Tissue of Origin® test, or TOO®, is a gene expression test that is indicated when there is clinical uncertainty about a poorly differentiated or undifferentiated, or a metastatic tumor where the primary tissue of cancer development is unknown. The Tissue of Origin® test we believe is the only FDA-cleared test of its kind, and can determine the most likely tissue of origin of a patient tumor sample from the fifteen most common tumor types - including thyroid, breast, pancreas, colon, ovarian and prostate - which account for ninety percent of all incidences of solid tissue tumors, by measuring the expression levels of 2,000 individual genes. TOO® is supported by extensive analytical and clinical validation data from robust, multi-center clinical studies. We believe TOO® can reduce the need for repeated testing, examinations, imaging and biopsy procedures by providing clinicians with the primary tissue type with greater certainty than traditional diagnostic techniques. This in turn empowers physicians to select the correct type of treatment earlier in the course of the patient's therapy.

In addition, we have developed the Summation™ Report which, we believe, provides an integrated view of a patient's test results and diagnosis in a user-friendly, visually appealing format for clinicians. Our pathologists and laboratory directors prepare these Summation™ Reports based on the clinical information and diagnosis provided by our laboratory professionals. All of our testing technologies are integrated into a Summation Report to allow oncologists to efficiently arrive at a definitive diagnosis and drive complete and effective decisions.

Biopharma Services

Biopharma services include laboratory and testing services performed for biotechnology and pharmaceutical companies engaged in clinical trials. Our biopharma services focus on providing pharmaceutical companies with oncology specific and non-oncology genetic testing services for phase I-IV trials along with critical support of ancillary services. These services include: biorepository, clinical trial logistics, clinical trial design, bioinformatics analysis, customized assay development. DNA and RNA extraction and purification, genotyping, gene expression and biomarker analyses. We also seek to apply our expertise in LDTs to assist in developing and commercializing drug-specific companion diagnostics.

Industry research has shown many promising drugs have produced disappointing results in clinical trials. For example, a study by Princess Margaret Hospital in Toronto estimated that 85% of the phase III trials testing new therapies for solid tumors studied over a five-year period failed to meet their primary endpoint. Given such a high failure rate of oncology drugs, combined with constrained budgets for biotech and pharmaceutical companies, there is a significant need for drug developers to utilize molecular diagnostics to decrease these failure rates. For specific molecular-targeted therapeutics, the identification of appropriate biomarkers indicative of disease type or prognosis may help to optimize clinical trial patient selection and increase trial success rates by helping clinicians identify patients that are most likely to benefit from a therapy based on their individual genomic profile.

Our Select One® offering was created specifically to help the biopharmaceutical community with clinical trials and companion diagnostic development in areas of our core expertise. We believe that oncology drugs have the potential to be among the most personalized of therapeutics, and yet oncology clinical trials continue to have some of the poorest approval rates. In an effort to improve the outcome of these trials, and more rapidly advanced targeted therapeutics, the biotechnology and pharmaceutical community is increasingly looking to companies that have both proprietary disease insights and comprehensive testing services as they move toward biomarker-based therapeutics.

The United States National Institutes of Health reported over 95,000 clinical trials were being conducted in the United States as of March 2017, and over 15,000 of these trials were actively recruiting participants for studies with oncology pharmaceuticals or biologics. Molecular- and biomarker-based testing services have been altering the clinical trials landscape by providing biotech and pharmaceutical companies with information about trial subjects' genetic profiles that may be able to inform researchers whether or not a subject will benefit from the trial drug or will experience adverse effects. Streamlined subject selection and stratification, and tailored therapies selected to maximally benefit each group of subjects may increase the number of trials that result in approved therapies and make conducting clinical trials more efficient and less costly for biotech and pharmaceutical companies. In 2016, 22 new drugs were approved by the FDA, and over a quarter of these drugs were oncology-focused, highlighting the potential value of incorporating genomic information into oncology clinical trial design.

In addition to the tests and services provided to biotech and pharmaceutical companies, we are developing NGS panels focused on pharmacogenomics and oncology that will inform researchers of trial subjects' drug sensitivities.

We provide the following services to biotech and pharmaceutical companies and researchers conducting clinical trials:

Genotyping and Pharmacogenomics Testing Services

- Over 400 genotyping assays including drug metabolizing enzymes, transporters and receptors.
- Over 19 validated gene expression assays.
- Testing for the FDA's Pharmacogenomic (PGx) Biomarkers in Drug Labels recommended panel.
- Loss of heterozygosity and copy number detection assays.

We also utilize our laboratories to provide clinical trial services to biotech and pharmaceutical companies and clinical research organizations to improve the efficiency and economic viability of clinical trials. Our clinical trials services leverage our knowledge of clinical oncology and molecular diagnostics and our laboratories' fully integrated capabilities. Our Select One® program integrates clinical information into the drug discovery process in order to provide customized solutions for patient stratification and treatment. By utilizing biomarkers, we intend to optimize the clinical trial patient selection. This may result in an improved success rate of the clinical trial and may eventually help biotech and pharmaceutical companies to select patients that are most likely to benefit from a therapy based on their genetic profile. We believe we are one of only a few laboratories with the capability to combine somatic and germline mutational analyses in clinical trials.

Our Select One® clinical trial services are aimed at developing customizable tests and techniques utilizing our proprietary tests and laboratory services to provide enhanced genetic signature analysis and more comprehensive understanding of complex diseases at earlier stages. We leverage our knowledge of clinical oncology and molecular diagnostics and provide access to our genomic database and assay development capabilities for the development and validation of companion diagnostics. This potentially enables companies to reduce the costs associated with development by determining earlier in the development process if they should proceed with additional clinical studies. We have been chosen by 8 of the top 10 biotech and pharmaceutical companies including Gilead Sciences Inc., GlaxoSmithKline, and H3 Bio (a division of Eisai) to provide clinical trial services and molecular profiling for patient selection and monitoring. Additionally, through our services we gain further insights into disease progression and the latest drug development that we can incorporate into our proprietary tests and services.

We also provide genetic testing for drug metabolism to aid biotech and pharmaceutical companies identify subjects' likely responses to treatment, allowing these companies to conduct more efficient and safer clinical trials. We believe pharmacogenomics drug metabolism testing helps deliver the promise of personalized medicine by enabling researchers to tailor therapies in development to differences in patients' genomic profiles.

Discovery Services

Our discovery services provide the tools and testing methods for companies and researchers seeking to identify new molecular- and biomarker-based indicators for disease. Discovery services we offer include validation of biomarkers for diseases including cancers, from which tests for diagnosis or prognosis may be established. We also provide consulting, guidance and preparation of samples and clinical trial design. We believe the ability to analyze variations in biomarkers and interpret these changes into meaningful predictors of disease or indicators of diagnosis is essential to discovering new molecular markers for cancer and targets for therapies.

Our Disease-Focused Testing Portfolio

Our disease-focused testing portfolio includes our portfolio of proprietary tests, along with a comprehensive range of non-proprietary oncology-focused tests and laboratory services. We have a comprehensive oncology testing portfolio, spanning nine of the ten most prevalent solid and hematological cancers, including the FDA-cleared test for tumors of unknown origin, our FDA-cleared Tissue of Origin®, or TOO® test. With the exception of the TOO® test, we offer our proprietary tests in the United States as laboratory-developed tests, or LDTs, and internationally as CE-marked in vitro diagnostic medical devices. The non-proprietary testing services we offer are focused in part on the specific oncology categories where we are developing our proprietary tests. We believe that there is significant synergy in developing and marketing a complete set of tests and services that are disease-focused and delivering those tests and services in a comprehensive manner to help guide and inform treatment decisions. The insights that we develop in delivering non-proprietary services are often leveraged in the development of our proprietary programs and in the validation of our proprietary programs.

Our proprietary tests are molecular- and biomarker-based genomic tests: microarrays, probes, gene expression panels, liquid biopsy and next generation sequencing. Each is directed at identifying specific genetic aberrations in cancer cells that serve as markers for diagnosis, prognosis and theranosis. We offer microarrays, next generation sequencing, gene expression and FISH probes because each serves a unique diagnostic or prognostic function. FISH- based tests, or probes, offer great sensitivity while microarrays provide a more comprehensive analysis of the cancer genome, NGS panels offer a method of detecting mutations or chromosomal aberrations of lesser frequency while gene expression can identify which genes are affected when the cancer type is unknown, and liquid biopsy techniques provide a method of isolating and detecting rare cells, such as tumor cells, circulating in a patient's blood, enabling a less invasive approach than tissue biopsy to obtain cells for additional biomarker analysis through one or more of the aforementioned tests. The tables below list and describes our proprietary tests that target hematologic cancers, HPV-associated cancers, solid tumors, hereditary cancers and immune-oncology biomarkers.

Hematological Cancers

As a group, hematologic cancers (cancers of the blood, bone marrow or lymph nodes) display significant clinical, pathologic and genetic complexity. Traditionally, diagnosis relies mostly on pathologic examination, flow cytometry and detection of only a few genetic markers. Importantly, the clinical course of the six main subtypes of these neoplasms ranges from indolent (follicular lymphoma) to aggressive (diffuse large B-cell lymphoma, mantle cell lymphoma and multiple myeloma), or mixed (chronic lymphocytic leukemia/small lymphocytic lymphoma, or CLL/SLL). Most risk-stratification for treatment decisions were traditionally based on clinical features of the disease. Few molecular prognostic biomarkers were utilized in a clinical setting. There remains an unmet medical need for robust biomarkers for the diagnosis, prognosis, theranosis and overall patient management in B-cell cancers. Given the higher frequency of these malignancies in the United States than in other countries due to relatively long lifespans and an aging population, we expect significant clinical demand for our tests and services that are focused on hematological cancers.

Our Proprietary Tests for Hematological Cancers

Test	Targeted Cancers	Technology & Advantages

Focus::NGS® **Focus::CLL™** **Focus::Myeloid™** **Focus::Lymphoma™**	• Chronic Lymphocytic Leukemia (CLL) • Myeloid Cancers - Myelodysplastic Syndromes (MDS) - Acute Myeloid Leukemia (AML) - Myeloproliferative Neoplasms (MPN) • B-Cell Lymphomas	• Focus::NGS™ is our family of next generation sequencing tests developed for the analysis of genomic alterations to determine, guide and inform diagnosis, prognosis and theranosis of particular hematological cancers and solid tumors. • Next generation sequencing performs massively parallel sequencing, which is able to detect biomarker mutations and aberrations that are present at very low levels and which may be missed by other, less sensitive methodologies. • Our proprietary Focus::CLL™ panel is the only NGS test for CLL that assesses 7 genes in a single test, providing clinically relevant data for prognosis, disease management and treatment selection, and is available both for routine clinical patient diagnosis and management, as well as for patient stratification in clinical trials for CLL or SLL. • Our proprietary Focus::Myeloid™ panel is designed to target 54 genes, and we believe it will provide important prognostic information for myelodysplastic syndromes (MDS) and acute myeloid leukemia (AML), as well as diagnostic and prognostic information for myeloproliferative neoplasms (MPN) • Our proprietary Focus::Lymphoma™ panel enables the targeted sequencing of 220 genes and has the ability to customize reporting that provides clinically actionable information to determine treatment options for patients with various forms of B-Cell Lymphomas.

MatBA®	• Chronic Lymphocytic Leukemia (CLL) • Small Lymphocytic Leukemia (SLL) • Diffuse Large B-Cell Lymphoma (DLBCL) • Mantle Cell Lymphoma (MCL) • Follicular Lymphoma (FL)	• MatBA® is the first targeted oligonucleotide-based microarray we developed for the analysis of genomic alterations to determine prognosis and theranosis in mature B-cell neoplasms. • MatBA® is designed to detect genomic copy number changes in mature B-cell neoplasms either solely or in a unique combination, relying on the comparative genomic hybridization of fluorescently differentially-labeled normal DNA and DNA extracted from the cancer specimen (array-CGH). • MatBA® was custom-designed to represent 80 regions of the human genome which have diagnostic and/or prognostic value in one or more of the mature B-cell neoplasm subtypes. • Unlike other technologies such as FISH, array-CGH using MatBA® simultaneously permits the detection of genomic gains and losses at multiple locations on a chromosome (loci) that characterize the mature B-cell neoplasm subtypes. • MatBA® can be routinely applied to the study of a range of specimen types including blood and bone marrow and FFPE biopsy specimens, which are often the only specimen available for analysis of FL, DLBCL and MCL.

HPV-Associated Cancers

HPV-associated cancers, including cervical, anal, and head and neck cancers, are caused by infection with high-risk variants of human papillomavirus (HPV), and are responsible for approximately 4% of all cancer diagnoses worldwide. Cervical cancer is the third most common cancer among women. According to the National Institutes of Health, while there are more than 100 types of HPV, approximately 15 types are considered to be cancer-causing, with only 2 strains being responsible for 70% of cervical cancer cases worldwide. Cervical cancer may be detected by traditional methods, including Pap smears and liquid cytology, where cervical cells obtained by Pap smear are observed by a pathologist, or by HPV typing, which identifies the strain of HPV virus presently infecting the patient. Neither of these techniques is able to identify the likelihood of the HPV-infection's developing into cancerous or precancerous lesions. According to the National Cancer Institute, about 50 million Pap smear tests to detect HPV are performed in the United States each year. It is estimated that approximately 2 million patients have abnormal Pap smear test results and are referred for biopsy/colposcopy as a result of such tests. However, only approximately 12,000 of these patients will develop cervical cancer. It is believed that early detection of HPV-associated cancers and lesions most likely to progress to cancer could eliminate unnecessary biopsies/colposcopies and thereby reduce health care costs.

Our Proprietary Tests for HPV-Associated Cancers

Test	Targeted Cancers	Technology & Advantages
FHACT®	• HPV-Associated Cancers - Cervical Cancer - Anal Cancer - Head & Neck Cancers	• FHACT® is our proprietary, 4-color FISH-based DNA probe designed to identify aberrations in four important chromosomal regions that have been implicated in cancers associated with infection by the human papilloma virus (HPV): cervical, anal and oropharyngeal. • FHACT® is designed to determine copy number changes of four particular genomic regions by fluorescent *in situ* hybridization (FISH). These regions of DNA give specific information about the progression from HPV infection to cervical cancer, in particular the stage and subtype of disease. • FHACT® is designed to enable earlier detection of abnormal cells and can identify the additional genomic biomarkers that allow for the prediction of cancer progression. • FHACT® is designed to leverage the same Pap smear sample taken from the patient during routine screening, thus reducing the burden on the patient while delivering greater information to the clinician. • We currently offer an application of FHACT® as an LDT for cervical cancer and are developing applications for additional cancer targets. • We have obtained CE marking for FHACT®, which allows us to market the test in the European Economic Area.

Solid Tissue Cancers

The term “solid tumors” encompasses abnormal masses of cells that do not include fluid areas (e.g. blood) or cysts. Solid tumors are composed of abnormal cell growths that originate in organs or soft tissue and are normally named after the types of cells that form them. Examples of solid tumors include breast cancer, lung cancer, ovarian cancer and melanoma. Solid tumors may be benign (not cancerous) or malignant (cancerous) and may spread from their primary tissue of origin to other locations in the body (metastasis). There are over 200 individual chemotherapeutic drugs available for combatting solid tumor cancers. Selection of an appropriate course of treatment for a patient may depend on identification of the gene mutation or mutations present in their particular cancer and on determining the cancer’s tissue of origin. Metastatic tumors with an uncertain primary site can be a difficult clinical problem. In tens of thousands of oncology patients every year, no confident diagnosis is ever issued, making standard-of-care treatment impossible.

Our Proprietary Tests for Solid Tissue Cancers

Test	Targeted Cancers	Technology & Advantages
Tissue of Origin®	• Solid Tissue Cancers - Thyroid - Breast - Non-Small Cell Lung Cancer (NSCLC) - Gastric - Pancreas - Colorectal - Liver - Bladder - Kidney - Non-Hodgkin's Lymphoma - Melanoma - Ovarian - Sarcoma - Testicular Germ Cell - Prostate	• Tissue of Origin® (TOO®) is FDA-cleared, Medicare-approved, and provides extensive analytical and clinical validation for statistically significant improvement in accuracy over other methods. • TOO® is a gene expression test that is used to identify the origin in cancer cases that are metastatic and/or poorly differentiated and unable to be typed by traditional testing methods. • TOO® increases diagnostic accuracy and confidence in site-specific treatment decisions, and leads to a change in patient treatment based on results 65% of the time it is used. • TOO® assesses 2,000 genes, covering 15 of the most common tumor types and 90% of all solid tumors. • In the fourth quarter of 2015, we acquired the TOO® test through our acquisition of substantially all of the assets of Response Genetics, Inc. • TOO® is FDA-cleared, Medicare-reimbursed, and provides extensive analytical and clinical validation for statistically significant improvement in accuracy over other methods.
Focus::Oncomine™	• Solid Tissue Cancers - Lung - Colorectal - Melanoma - Breast - Bladder - Thyroid	• Focus::Oncomine™ is one test in our family of next generation sequencing tests developed for the analysis of genomic alterations to determine, guide and inform diagnosis, prognosis and theranosis of solid tumors. • Next generation sequencing performs massively parallel sequencing, which is able to detect biomarker mutations and aberrations that are present at very low levels and which may be missed by other, less sensitive methodologies. • Focus::Oncomine™ is designed to cover hotspot mutations of 35 unique genes in various different types of solid tumors, allowing for the detection of 989 hotspot variants, including single nucleotide variants (SNVs), with a very low input DNA material. • Focus::Oncomine™ is designed to detect hotspot mutations that have clinical utility in prognosis or diagnosis or therapeutic implications in various solid tumors. • The biomarkers included in Focus::Oncomine™ were selected based on information in the Oncomine Knowledgebase, which compiles genomic information from clinical trials, and were confirmed with industry-leading pharmaceutical partners. The results of the assay should be interpreted in the context of available clinical, pathologic, and laboratory information.

Focus::Renal™	• Kidney	• Focus::Renal™, a highly-sensitive NGS panel, detects mutations of 76 renal cancer-related genes, as well as genome-wide copy number changes, and critical single nucleotide variants (SNVs), all in a single test, that enable precision diagnosis, prognosis, and therapy selection for renal cancer patients. • Focus::Renal™ is the only NGS panel to simultaneously detect genome-wide copy number changes, SNP genotypes along with mutations in 76 renal cancer-related genes, covering relevant drug pathways. • Focus::Renal™ can be performed on a wide variety of patient specimen types, such as needle biopsies, fine-needle aspirates, and resected specimens using both formalin-fixed paraffin-embedded (FFPE) and fresh/fresh-frozen specimens, including the ones with minimal starting material. • Focus::Renal™ was developed by CGI in collaboration with leading cancer centers and academic institutions, including MSKCC, Cleveland Clinic, Huntsman Cancer Center at University of Utah, and University Hospital of Paris.
UroGenRA®	• Kidney - Clear Cell Renal Cell Carcinoma (ccRCC) - Chromophobe Renal Cell Carcinoma (chrRCC) - Papillary Renal Carcinoma (pRCC) - Oncocytoma (OC) • Prostate • Bladder	• UroGenRA® has 101 regions of the human genome represented, and these regions can be used for gain/loss evaluation in urogenital neoplasms including kidney, prostate and bladder. • UroGenRA®-Kidney Array-CGH provides genomic diagnostic information to assist routine histology in the subtyping of ccRCC, chrRCC and OC from either core needle biopsies or resected specimens. • UroGenRA®-Kidney assesses 16 genomic regions that have diagnostic significance in the four main renal cortical neoplasm subtypes. • UroGenRA®-Kidney can use DNA from either core needle biopsies or resected specimens, provided as fresh frozen tissue. • Result from UroGenRA®-Kidney are analyzed using our proprietary algorithm KidneyPath™ to classify specimens as normal, undetermined, or into one of the four main renal cortical neoplasm subtypes.

Hereditary Cancers

Hereditary cancer syndromes are inherited conditions in which an individual has a greater than normal lifetime risk of developing certain types of cancer, and are caused by gene mutations that are passed from parents to children. In a family with a hereditary cancer syndrome, one or more types of cancers may be present in several family members, may develop at an early age, or one person may develop more than one type of cancer. Hereditary cancer syndromes are estimated to account for up to 10% of all cancer diagnoses in the United States. Many of the gene mutations that cause hereditary cancers have been identified, and genetic testing may identify whether an individual's cancer is due to one of these inherited genes. Genetic testing for family members who have not been diagnosed with cancer can also reveal whether they are at an increased risk for developing hereditary cancers.

Our Proprietary Hereditary Cancer Test

Test	Targeted Cancers	Technology & Advantages
Focus::HERSite™	• Breast • Ovarian	• Focus::HERSite™ is one test in our family of next generation sequencing tests developed for the analysis of genomic alterations to determine, guide and inform diagnosis, prognosis and theranosis of some of the most prevalent hereditary cancers. • Next generation sequencing performs massively parallel sequencing, which is able to detect biomarker mutations and aberrations that are present at very low levels and which may be missed by other, less sensitive methodologies. • Focus::HERSite™ analyzes the 16 most common genes associated with breast and ovarian cancers and provide comprehensive coverage of the BRCA1 and BRCA2 genes. • Focus::HERSite™ sequences 16 genes associated with an increased lifetime risk of cancer in a single reaction. • Mutations in these genes are typically single nucleotide variants (SNVs) and small insertions or deletions, and like BRCA 1/2, the increased cancer risk is inherited in an autosomal dominant manner, meaning that one inherited gene is sufficient to cause disease. • Sequencing these genes in a given patient increases the clinical sensitivity for overall increase in breast and ovarian cancer risk.

Immuno-Oncology Testing

Immuno-oncology encompasses a method of cancer treatment that harnesses the power of a patient's own immune system to combat cancer growth and development. Abnormal cells are ordinarily destroyed by the body's immune system before these cells are able to proliferate and develop into a tumor. In some cancers, abnormal cells have developed mutations allowing them to avoid the body's natural defenses and these cells are not destroyed by the immune system. Immuno-oncology aims to either activate the immune system to recognize and destroy these cancer cells, or to turn off the mechanisms cancer cells develop than enable them to avoid detection by the immune system, thereby permitting the immune system to recognize and eliminate them. The Cancer Research Institute reports that although there are 6 approved immuno-oncology therapies approved for patient treatment, and there are over 150 clinical trials focused on developing immuno-oncology treatments.

We believe immuno-oncology is rapidly increasing in clinical practice and presents a unique market opportunity when combined with precision testing and traditional and combination oncology therapies. In early 2016, we launched a comprehensive immuno-oncology testing portfolio for use in clinical trials, translational research, and therapy selection for patients. This portfolio is available for clinical trials, patient care, and translational research utilizing multiple technological platforms through our New Jersey and California facilities. Our portfolio of immuno-oncology tests includes immunohistochemistry (IHC)-based tests that can detect novel biomarkers like PD-1 and PD-L1 and flow cytometry-based tests and panels that can assess immune response against cancers by evaluating subsets of immunomodulatory and effector cells. We also offer an NGS-based targeted RNA sequencing test that can measure expression levels of drug targets, tumor infiltrate composition, and total immune cell composition. Many of these assays are also available for clinical use and are CLIA- and New York State-approved.

Sales and Marketing

Our sales and marketing efforts consist of both direct and indirect efforts, with the majority of efforts focused on direct sales in both the United States and India. The table below summarizes our sales approach by geography and customer segment:

United States	Clinical Sales	- - Collaborate with leading research universities and institutions that enable the validation of our new tests. Work with community-based cancer centers that need a reliable and collaborative partner for cancer testing. - Build relationships with individual thought leaders in oncology, hematology and pathology to deliver services that provide value to their patients.
	Biopharma Sales	- Collaborate with scientific development teams at pharmaceutical companies on studies involving translational medicine and genotyping. - Build relationships in the research and development segment to identify partners with a need for biomarker discovery studies.
India	Clinical Sales	- Develop relationships with oncologists, corporate hospitals and reference labs, as well as with physicians in local clinics. - Engage the population of oncology patients in India, where a majority of oncology drugs are paid for out-of-pocket.
	Biopharma & Discovery Sales	- Work with academic and research institutions for validation of our tests in the Indian population. - Collaborate with scientific development teams at biotech and pharmaceutical companies and government agencies on studies involving tests and services.
China	Biopharma Sales	- Leverage US-based companies conducting clinical trials with a component of those trials occurring in China.

Our sales force professionals have backgrounds in hematology, pathology, and laboratory services, and many years of experience in clinical oncology sales, esoteric laboratory sales from leading biopharmaceutical, pharmaceutical or specialty reference laboratory companies. We currently have a team of 9 sales professionals in the United States and 3 in India. We support our sales force with clinical specialists who bring deep domain knowledge in the design and use of our tests and services.

In addition to our direct sales force, we entered into agreements with the Laboratory Services group of ICON plc, the global CRO (Nasdaq:ICLR), and BARC Global Laboratories (a part of Cerba Healthcare) to work together to offer biotech and pharmaceutical customers a comprehensive, integrated and efficient solution for laboratory testing for global oncology trials from Phase I through Phase IV. Through our joint service offerings with ICON and BARC, we can provide biotech and pharmaceutical customers with access to combined expertise ranging from complex, oncology-focused molecular and biomarker-based testing to core central laboratory analysis, project and data management and sample logistics on a global basis.

We also promote our tests and services through marketing channels commonly used by the biopharma and pharmaceutical industries, such as internet, medical meetings and broad-based publication of our scientific and economic data. In addition, we provide easy-to-access information to our customers over the internet through dedicated websites. Our customers value easily accessible information in order to quickly review patient or study information.

Research and Development Collaborations

We formally and informally collaborate with leading oncology centers and community-based hospitals to develop our proprietary diagnostic tests, and we work closely with leading cancer researchers at these institutions to develop proprietary tests tailored to their needs and specifications. Additionally, many of these centers have obtained Specialized Programs of Research Excellence status, as designated by the National Cancer Institute. Our collaborations with these centers give us access to large datasets of information that we use to develop our proprietary tests.

Below is a summary of our active key collaborations. In certain cases we have formal written agreements with collaborators and in other cases we have no written agreement with our collaborators or only informal written arrangements.

Collaborating Institution	Principle Investigator(s)	Focus of Collaboration
North Shore-Long Island Jewish Health System, *New York*	Dr. Kanti Rai Dr. Nicholas Chiorazzi	Clinical validation of biomarkers and signatures for CLL diagnosis and therapeutic response
Memorial Sloan-Kettering Cancer Center, *New York*	Dr. Jeremy Durack	Evaluation of FISH-based and CHG-array tests
National Cancer Institute, *Maryland*	Dr. Nicolas Wentzensen	Evaluation of FHACT®
Kamineni Hospital, *Hyderabad, India*	Dr. Annie Hassan	Evaluation of FHACT®
Columbia University, *New York*	Dr. Azra Raza Dr. Siddhartha Mukherjee	Identification of genomic biomarkers for myeloid cancers
Apollo Hospitals, *India*		Evaluation of FHACT®
Keck Medicine of University of Southern California, *California*	Dr. Imran Siddiqi	Identification and evaluation of genomic biomarkers for lymphomas and other B cell malignancies
University of Southern California, *California*, & HTG Molecular, *Arizona*	Dr. Pamela Ward	MicroRNA whole transcription assay validation
University of Southern California, *California*, & HTG Molecular, *Arizona*	Dr. Heinz-Josef Lenz and Dr. Yu Sunakawa	Gene expression analysis using an immuno-oncology panel for measurement of response to immune therapy
Groupe Hospitalier Pitié Salpétriere, *Paris*		Analyze the variability of genomic alterations in renal cancer
Huntsman Cancer Center Institute, University of Utah, *Utah*	Dr. Neeraj Agarwal	Evaluation of biomarkers for kidney cancer diagnosis and therapeutic response and liquid biopsy assay development
Huntsman Cancer Center Institute, University of Utah, *Utah* and Pfizer		Validation of biomarkers to predict Stutent response and liquid biopsy assay development
Moffitt Cancer Center, *Florida*	Dr. Anna Giuliano	Evaluation of FHACT® for oral cancer
University of Virginia School of Medicine, Virginia, & HTG Molecular, *Arizona*		Evaluation of genomic signatures in immune response
Yale University	Dr. Brian Shuch	Evaluation of biomarkers in NGS Focus::Renal™ to stratify and monitor patients

Competition

With respect to our clinical services, our principal competition comes from existing mainstream diagnostic methods and laboratories that pathologists and oncologists use and have used for many years or decades. It may be difficult to change the methods or behavior of the referring pathologists and oncologists to incorporate our molecular diagnostic testing in their practices. In addition, companies offering capital equipment and kits or reagents to local pathology laboratories represent another source of potential competition. These kits are used directly by the pathologist, which can facilitate adoption.

We also face competition from companies that currently offer or are developing products to profile genes, gene expression or protein biomarkers in various cancers. Precision medicine is a new area of science, and we cannot predict what tests others will develop that may compete with or provide results superior to the results we are able to achieve with the tests we develop. Our competitors include public companies such as NeoGenomics, Inc. (including recently acquired Clarient), Quest Diagnostics, Abbott Laboratories, Inc., Johnson & Johnson, Roche Molecular Systems, Inc., bioTheranostics, Inc., Genomic Health, Inc.,

Myriad Genetics Inc., and Foundation Medicine, Inc., Invitae Corp., and many private companies. We expect that pharmaceutical and biotech companies will increasingly focus attention and resources on the personalized diagnostic sector as the potential and prevalence increases for molecularly targeted oncology therapies approved by FDA along with companion diagnostics. With respect to our clinical laboratory business we face competition from companies such as Genoptix Medical Laboratory, NeoGenomics, Inc., Bio-Reference Laboratories, Inc. (a division of Opko), LabCorp, Quest Diagnostics and Invitae Corp.

Additionally, projects related to the molecular mechanisms driving cancer development have received increased government funding, both in the United States and internationally. The National Cancer Institutes's Cancer Moonshot is anticipated to increase both patient awareness and federal government funding for research and clinical trials. As more information regarding cancer genomics and biomarkers becomes available to the public, we anticipate that more products aimed at identifying targeted treatment options will be developed and that these products may compete with ours. In addition, competitors may develop their own versions of our tests in countries where we did not apply for patents or where our patents have not issued and compete with us in those countries, including encouraging the use of their test by physicians or patients in other countries.

Third-Party Suppliers

We maintain control, validation and quality assurance over our NGS panels, DNA microarrays and probes. Our microarrays and NGS panels are designed in our facility by our scientists and technicians using state of the art genomic mapping and analysis software. The specifications for our NGS panels are sent to Thermo Fisher Scientific (Ion Torrent) and Illumina for final manufacturing. Our NGS panels are manufactured under strict quality control and compliance. Upon manufacturing our custom, proprietary NGS panels, they are shipped back to our Rutherford facility for testing and acceptance.

We also currently rely on contracted manufacturers and collaborative partners to produce materials necessary for our FDA-cleared Tissue of Origin® test. We plan to continue to rely on these manufacturers and collaborative partners to manufacture these materials, including those materials required for use in our FDA-cleared TOO® test.

Patents and Proprietary Technology

Our business develops proprietary tests that enable oncologists and pathologists at hospitals, cancer centers, and physician offices to properly diagnose and inform cancer treatment. We rely on a combination of patents, patent applications, trademarks, trademark applications, trade secrets, industry know-how, as well as various contractual arrangements, in order to protect the proprietary aspects of our technology.

Our patent portfolio consists of 49 issued U.S. patents, several pending U.S. applications, and 175 foreign patents. We have a disease-focused portfolio of patents. Our key patents include:

- Hematological cancers. We have two U.S. patents (U.S. Patent Nos. 8,580,713 and 8,557,747), as well as patents in the EU, India and Canada directed to MatBA®, a microarray for detecting (and distinguishing) particular types of mature B cell neoplasms present in typical non-Hodgkin’s lymphoma, Hodgkin’s lymphoma and chronic lymphocytic leukemia. These patents and foreign application cover our trademarked MatBA® microarray and are directed to both the microarray itself as well as associated methodologies designed to detect the particular type of mature B cell neoplasm present in a patient. These patents and foreign application also cover the use of computer-assisted means to facilitate and expedite that detection process. The MatBA® microarray patents issued from the first of our family of applications in the microarray space. The term of these patents runs through 2030.

- Solid Tumors. We have 13 U.S. patents, including (U.S. Patent Nos. 7,049,059, 7,560,543, 7,732,144, 8,586,311, 8,026,062, 6,956,111, 6,905,821, 7,005,278, 6,686,155, 7,138,507, as well as numerous foreign patents, including patents in Australia, Canada, China and Japan. These patents relate to certain aspects of the gene expression technology used in our solid tumor tests. The solid tumor markers covered by these patents include thymidylate synthase (TS), dihydropyrimidine dehydrogenase (DPD), excision repair gene CC1 (ERCC1), glutathione-s transferase pi (GST-p), epidermal growth factor receptor (EGFR) and HER2/neu gene, though our patents are not directed to all aspects of expression of such markers. The term of these patents runs through 2023.

- We have four U.S. patents (U.S. Patent Nos. 8,977,506, 8,321,137, 7,747,547 and 8,473,217) covering our Tissue of Origin® Test. These patents are directed at systems and methods for detecting biological features in solid tumors. The term of these patents run through 2030.

- Urogenital cancers. We have two U.S. patents (U.S. Patent Nos. 8,603,948 and 8,716,193) and one EU patent. These patents directed to a novel, highly sensitive and specific probe panel which detects the type of renal cortical neoplasm present in a biopsy sample. These patents cover a probe that permits diagnosis of the predominant subtypes of renal cortical neoplasms without the use of invasive methods and provides a molecular cytogenetic method for detecting and analyzing the type of renal cortical neoplasm present in a renal biopsy sample. The term of these patents runs through 2027. We also have two patent applications for methods and tools for the diagnosis of female gynecological cancers and precancers (US Patent Application No. 61/581,350) and methods and tools for the diagnosis and prognosis of urogenital cancers (US Patent Application No. 61/765,678).

- HPV-Associated Cancers. We have three U.S. patents (U.S. Patent Nos. 9,157,129, 8,865,882 and 8,883,414) and an EU patent. These patents cover methods for detecting HPV-associated cancers used in our FHACT® test. The term of these patents run through 2031.

- FISH Probes. We have two patents covering our FISH probes. These patents cover probes and methodologies designed to detect and analyze particular chromosomal translocations (genetic lesions) associated with a wide range of cancers using a technique known as FISH and serve as the backbone for several of our other pending patent applications, which are more specifically geared towards other probes (and methodologies). The term of these patents run through 2022.

In addition to patents, we hold sixteen U.S. registered trademarks, including a federal registration for “CGI” as well as three U.S. trademark applications and one foreign trademark registration for certain of our proprietary tests and services. Our strategic use of distinctive trademarks has garnered increased name recognition and brand awareness for our tests and services within the industry.

Through our clinical laboratories, we provide several clinical services that utilize our proprietary trade secrets. In particular, we maintain trade secrets with respect to specimen accessioning, sample preparation, and certain aspects of cytogenetic analysis. All of our trade secrets are kept under strict confidence, and we take all reasonable steps, including the use of non-disclosure agreements and confidentiality agreements, to ensure that our confidential information is not unlawfully disseminated. We also conduct training sessions on the importance of maintaining and protecting trade secrets with our scientific staff and laboratory directors and supervisors.

In addition to our proprietary intellectual property, we exclusively license from University of Southern California, or USC, the use of extraction methodologies and related technologies used in our solid tumor tests, which have been patented in the United States and a number of other jurisdictions, including Australia, Austria, Belgium, Canada, China, Denmark, France, Germany, Hong Kong, Ireland, Israel, Italy, Luxembourg, Mexico, The Netherlands, Norway, Russia, South Korea, Spain, Sweden, Switzerland and the United Kingdom. Currently, this exclusive license includes seven United States patents claiming methods related to this technology. Our USC licensed patents are scheduled to expire between December 2019 and December 2020.

We also entered into nonexclusive licenses with the National Cancer Institute for the use of its intellectual property relating to a 3q marker and with Stanford University for use and development of a diagnostic assay and predictive model that has been granted two patents for the stratification and risk prediction for DLBCL patients. Under the terms of the license, we are permitted to use the National Cancer Institute’s proprietary intellectual property for use in our patent pending FHACT® DNA probe, which is directed to the diagnosis and prognosis of certain HPV-associated cancers.

Operations and Production Facilities

We work with electronic medical records providers to facilitate seamless communication between our clinical laboratories and the oncologist or pathologist at the test ordering site. Currently, we have the ability to integrate with electronic medical record systems, as we have already done with MDL, an electronic medical record provider. We do this integration through utilizing HL7 interfaces, which are standard in health care information technology systems. We currently employ HL7 for its integration with a revenue cycle management company, XIFIN, as well as with its electronic medical records partners such as MDL. The use of the HL7 interface allows systems written in different languages and running on different platforms to be able to talk to each other through the use of an abstracted data layer. This means that we do not have to spend significant extra time designing and developing common communications protocols when integrating with other electronic health records systems or billing systems providers.

When a customer obtains a specimen from a patient for oncology testing, he or she will complete a requisition form (either by hand or electronically, or via electronic medical records technology), and package the specimen for shipment to us. Once we receive the specimen at our laboratory and we enter all pertinent information about the specimen into our clinical laboratory information system, one of our laboratory professionals prepares the specimen for diagnosis. The prepared specimen is sent to

one of our pathologists or medical directors who is experienced in making the diagnosis requested by the referring oncologist or pathologist.

After diagnosis, our pathologist uses our laboratory information systems to prepare a comprehensive report, which includes any relevant images associated with the specimen. Our clinical reporting portal, cgireports.com, allows a referring oncologist or pathologist to access his/her test results in real time in a secure HIPAA compliant manner. The reports are generated in industry standard PDF formats which allows for high definition color images to be reproduced clearly. This portal has been fully operational at our facilities since 2011.

In most cases we provide both the technical analysis and professional diagnosis, although we also fulfill requests from oncologists and pathologists for only one service or the other. If an oncologist or pathologist at the hospital, cancer center, reference laboratory or physician office requires only the analysis, we prepare the data and then return it to the referring oncologist or pathologist for assessment and diagnosis.

Quality Assurance

We are committed to providing reliable and accurate diagnostic services to our customers. Accurate specimen identification, timely communication of diagnoses, and prompt correction of errors, is critical. We monitor and improve our performance through a variety of methods, including performance improvement indicators, proficiency testing (CAP and New York State), external audits and satisfaction surveys. All quality concerns and incidents are subject to root cause analysis and our procedures are put through annual evaluation to ensure that we are providing the best services possible to our patients and customers. Protection of patient results from misuse and improper access is imperative and thus electronic and paper results are guarded via password- protection and identification cards.

We have established a comprehensive Quality Assurance and Management Program for our laboratories designed to drive accurate and timely test results and to ensure the consistent high quality of our testing services. The Quality Assurance and Management Program documents the quality assurance/performance improvement plans and policies and the laboratory quality assurance and quality control procedures that are necessary to ensure that we offer the highest quality of diagnostic testing services. This program is designed to satisfy all the requirements necessary for local and state licensures applicable to our business, including requirements from the New Jersey Health Department, the California Department of Health and the New York Department of Health Clinical Laboratory Evaluation Program, and accreditation for clinical diagnostic laboratories by CAP. We follow the policies and procedures for patient and employee safety, hazardous waste disposal and fire codes stated in the general laboratory procedure manual. We believe that all pertinent regulations of CLIA, Occupational Safety and Health Administration (“OSHA”), Environmental Protection Agency and FDA are satisfied by following the established guidelines and procedures of our Quality Assurance and Management Program.

In addition to the compulsory proficiency programs and external inspections required by CMS and other regulatory agencies, we have developed a variety of internal systems and procedures to emphasize, monitor and continuously improve the quality of our operations. We maintain internal quality controls by routinely processing specimens with known diagnoses in parallel with patient specimens. We also have an extensive, internally administered program of specimen proficiency testing, in which our laboratory staff are blinded to the results.

We participate in numerous externally administered quality surveillance programs and our laboratories are accredited by CAP. The CAP accreditation program involves both unannounced on-site inspections of our laboratories and our participation in CAP’s ongoing proficiency testing program. CAP is an independent, non- governmental organization of board-certified pathologists that accredits laboratories nationwide on a voluntary basis and that has been recognized by CMS as an accreditation organization to inspect laboratories to determine adherence to the CLIA standards. Successful participation in CAP’s proficiency testing program satisfies the CLIA requirement for participation in proficiency testing programs administered by an external source.

Each of our facilities maintains its own quality assurance processes, which are coordinated across sites to maintain consistency in standard operating procedures, employee training and safety manuals.

Third-Party Payor Reimbursement

Depending on the billing arrangement and applicable law, we are reimbursed for clinical services by: third-party payors that provide coverage to the patient, such as an insurance company, managed care organization or a governmental payor program; physicians or other authorized parties (such as hospitals or independent laboratories) that order testing service or otherwise refer the services to us; or the patient. For the year ended December 31, 2016, we derived approximately 20% of our total

revenue from private insurance, including managed care organizations and other health care insurance providers, 14% from Medicare, and 5% from other health care facilities, including hospitals.

Where there is a coverage policy, contract or agreement in place, we bill the third-party payor, the hospital or referring laboratory as well as the patient (for deductibles and coinsurance or copayments, where applicable) in accordance with the policy or contractual terms. Where there is no coverage policy, contract or agreement in place, we pursue reimbursement on behalf of each patient on a case-by-case basis and rely on applicable billing standards to guide our claims. In addition, we have implemented a new patient financial assistance program (CGI MAP Program) that complies with Federal guidelines.

We are reimbursed for three categories of tests: (1) genetic and molecular testing; (2) anatomic pathology and IHC and (3) general immunology and flow cytometry. Reimbursement under the Medicare program for the diagnostic services that we offer is based on either the Medicare Physician Fee Schedule (PFS) or Medicare Clinical Laboratory Fee Schedule (CLFS), each of which in turn is subject to geographic adjustments and is updated annually. Medical services provided to Medicare beneficiaries that require a degree of physician supervision or other involvement, such as pathology tests, are generally reimbursed under the Medicare PFS, whereas clinical diagnostic laboratory tests are generally reimbursed under the CLFS. Most of the services that we provide are for genetic and molecular testing, which are reimbursed as clinical diagnostic laboratory tests.

Medicare fee schedule amounts for clinical diagnostic laboratory tests are established for each billing code, or CPT code. In addition, for its laboratory fee schedule, Medicare also sets a cap on the amount that it will pay for any individual test. This cap, usually referred to as the National Limitation Amount, is set at a percentage of the median of all the contractor fee schedule amounts for each billing code. In the past, Congress has lowered the percentage of the median used to calculate the National Limitation Amount in order to achieve budget savings. Currently, the National Limitation Amount ceiling is set at 74% of the median for established tests and 100% of the median for certain new tests that were not previously reimbursed. In billing Medicare for clinical laboratory services, we are required to accept, as payment in full, the lowest of our actual charge, the fee schedule amount for the state or local geographical area or the National Limitation Amount. There is currently no copayment or deductible required for tests paid under the CLFS, although Congress periodically has considered implementing such a requirement.

In addition, Congress routinely lowers or eliminates the update factor that would otherwise apply to the applicable CLFS payment. For example, under the health care reform legislation, passed in 2010, payments under the CLFS are reduced by 1.75% through 2015 and, in addition, a productivity adjustment, further reducing payment rates is also imposed. In addition, in February 2012, Congress passed the Middle Class Tax Relief and Job Creation Act of 2012, which required that the CLFS be "rebased" by -2%. As a result of these changes, for 2015 the CLFS was reduced by -.25%.

Further, in 2014, Congress passed the Protecting Access to Medicare Act or PAMA which also makes significant changes in the way the Medicare will pay for laboratory services. Under PAMA and the final rule, which was issued on June 17, 2016, certain laboratories (including our laboratories that provide clinical services) are required to report the amount that they are paid by private payors for each test beginning in January 2017. CMS will use this data to calculate a weighted median for each test. That new price is to become effective on January 1, 2018, although any resulting reductions will be phased in over time. This data reporting process will be repeated every three years for most tests, although price data for Advanced Diagnostic Laboratory Tests (ADLTs) will be reported every year. It is possible that some of our tests could be considered ADLTs, which will require us to report prices annually. In addition, we may also be required to obtain a code from CMS or an entity that it designates for our tests that have not previously had a code. Although CMS was also required to issue a Final Rule implementing PAMA by June 30, 2015, it did not issue a final rule until June 17, 2016. As a result of this delay, many of the statutory deadlines will not be met. It is not known at this time how the implementation of PAMA will affect our reimbursement.

Certain of our tests are paid under the Medicare PFS, rather than the CLFS. Tests paid for under the PFS are based on "relative value units" established for each service. These RVUs are then multiplied by a conversion factor to arrive at a monetary amount. Each year, CMS calculates an update to this conversion factor based on a formula included in the Medicare law, referred to as the Sustainable Growth Rate (SGR) Formula. When it is applied, this SGR formula often would require a decrease in reimbursement unless Congress acts to overturn this result. As a result, Congress consistently passes legislation to prevent implementation of significant cuts that would otherwise be effective. For 2014, CMS had projected the reimbursement cut resulting from the SGR formula would be approximately 20 percent, unless Congress acted to prevent the reduction. On December 18, 2013, Congress passed legislation that enacted a 0.5 percent increase in the conversion factor, which was effective until March 31, 2014. On April 1, 2014, President Obama signed the Protecting Access to Medicare Act of 2014, or PAMA. PAMA extended the 0.5 percent increase through March 31, 2015 and made other changes to laboratory reimbursement discussed above.

On April 16, 2015, President Obama signed the Medicare and CHIP Reauthorization Act (MACRA), which had previously been passed by both houses of Congress. MACRA repealed the provisions related to the Medicare SGR formula and implements a new physician payment system that is designed to reward the quality of care. In addition, it extends the current Medicare Physician Fee Schedule rates through June 2015, and then increases them by 0.5 percent for the remainder of 2015. Beginning on January 1, 2016, the rates will be increased annually by 0.5 percent, through 2019. For 2020 through 2025 payments will be frozen, although payment will be adjusted to account for performance on certain quality metrics under the Merit-Based Incentive Payment Systems (MIPS) or to reflect physician participation in alternative payment models (APMs). For 2026 and subsequent years, qualified APM participants receive an annual 0.75% update on Medicare physician payment rates, while those not participating receive a 0.25% annual payment update, plus any applicable MIPS-based payment adjustments. It is too early to determine how these changes may impact our business.

Medicare also has policies that may limit when we can bill directly for our services and when we must instead bill another provider, such as a hospital. When the testing that we perform is done on a specimen that was collected while the patient was in the hospital, as either an inpatient or outpatient, we may be required to bill the hospital for some of our services, rather than the Medicare program, depending on whether or not the service was ordered more than 14 days after the patient's discharge from the hospital. These requirements are complex and time- consuming and, depending on what they require, may affect our ability to collect for our services.

Our reimbursement rates from private third-party payors can vary based on whether we are considered to be an "in-network" provider, a participating provider, a covered provider or an "out-of-network" provider. These definitions can vary from insurance company to insurance company, but we are generally considered an "out of network" or non- participating provider in the vast majority of our cases. It is not unusual for a company that offers highly specialized or unique testing to be an "out of network" provider. An "in-network" provider usually has a contracted arrangement with the insurance company or benefits provider. This contract governs, among other things, service-level agreements and reimbursement rates. In certain instances an insurance company may negotiate an "in-network" rate for our testing rather than pay the typical "out-of-network" rate. An "in-network" provider usually has rates that are lower per test than those that are "out-of-network", and that rate is based on the laboratory fee schedule. The discount rate varies based on the insurance company, the testing type and the often times the specifics of the patient's insurance plan.

We have contracts with commercial insurance carriers that provide access to certain of our tests. When a test is covered as part of these contracts it is paid at the rate stated in the contract. The Company also has preferred provider agreements and when a claim is processed through one of these organizations, reimbursement is based on usual and customary fees in the specific geography with a discount applied.

In addition, as part of the Middle Class Tax Relief and Job Creation Act of 2012 ("MCTRJCA"), signed into law by President Obama on February 22, 2012, Congress eliminated the special billing rule that had allowed laboratories to bill Medicare for the technical component of certain pathology services furnished to patients of qualifying hospitals. Effective July 1, 2012, independent laboratories, like our laboratories, are required to bill the hospital, rather than the Medicare Program, for the technical component of these services in most instances.

Billing Codes for Third-Party Payor Reimbursement

CPT codes are the main data code set used by physicians, hospitals, laboratories and other health care professionals to report separately-payable clinical laboratory tests for reimbursement purposes. The CPT coding system is maintained and updated on an annual basis by the American Medical Association. Although there is no specific code to report microarrays for oncology, such as our MatBA®-CLL, there are existing codes that describe all of the steps in our MatBA®-CLL testing process. We currently use a combination of different codes to describe the various steps in our testing process. Many of the CPT codes used to bill for molecular pathology tests such as ours have been significantly revised by the CPT Code Editorial Panel. These new codes replace the more general "stacking" codes that were previously used to bill for these services with more test-specific codes, which became effective January 2013. In the CY 2013 Physician Fee Schedule Final Rule, which was issued in November 2012, CMS stated that it had determined it would pay for the new codes as clinical laboratory tests, which are payable on the Clinical Laboratory Fee Schedule (CLFS). CMS also stated that it planned to "gapfill" the new codes; that is, it will ask the contractors to determine a reasonable price for the new codes. This process was completed in 2013, and these tests are now paid for under the new "gapfilled" rates.

Among the new codes that were created by CPT were a specific subset of codes called Multi-analyte Assays with Algorithmic Analysis (MAAAs). These tests typically use an algorithm applied to certain specific components to arrive at a score that is used to predict a particular clinical outcome. CMS recently stated that it will not issue a categorical determination for all MAAA tests, but will consider each individual test that is classified by the CPT as a MAAA on its own merits. On September 25, 2015, CMS

released its Preliminary Determinations for new CPT codes effective in 2016, including several new MAAA CPT codes. CMS had proposed "crosswalking" these codes to an unrelated test, resulting in a significant cut in their reimbursement. However, on November 17, 2015, CMS reversed its policy and directed that the tests be gapfilled by the local contractors. It is expected that when PAMA is fully implemented, many of these MAAA codes will be considered and reimbursed as ADLTs. For 2016, none of our revenue is derived from tests that may be considered MAAAs.

As of January 1, 2014 we are utilizing the "Not Otherwise Classified" (NOC) codes when billing for some of our MAAA tests. The reimbursement policies for the NOC codes vary from payor to payor with regard to specific tests and many of the payors have followed suit. This extends our revenue cycle for these particular tests, where the normal timeframe for reimbursement of a claim is approximately 45-90 days. These tests can take upwards of a year to be reimbursed. There can be no guarantees that Medicare and other payors will establish positive or adequate coverage policies or reimbursement rates in the future. We are moving forward with plans to obtain billing codes for our tests. A specific code for our tests, however, does not assure an adequate coverage policy or reimbursement rate. Please see the section entitled "Legislative and Regulatory Changes Impacting Clinical Laboratory Tests" for further discussion of certain legislative and regulatory changes to these billing codes and the impact on our business.

On October 30, 2015, CMS issued the Medicare Physician Fee Schedule Final Rule for 2016, which set out policies that were effective January 2016. Among those policy changes are reductions in the payments for flow cytometry and immunohistochemistry, two types of tests that we frequently perform. CMS has also stated that certain of these same tests may be considered "misvalued" which means they could be subject to additional scrutiny in the future. The 2017 Physician Fee Schedule Final rule reduced reimbursement rates for flow cytometry by approximately 19%. However, CMS did not finalize its proposal to combine flow cytometry codes 88184 and 88185 into one code. At this time, we are still assessing the potential impact of these changes.

Coverage and Reimbursement for Our Proprietary Tests

We have been able to receive reimbursement for our tests from some payors based on their established policies, including major commercial third-party payors.

The current landscape with payors is generally as follows:

Commercial Third-party Payors and Patient Pay. Where there is a coverage policy in place, we bill the payor and the patient in accordance with the established policy. Where there is no coverage policy in place, we pursue reimbursement on behalf of each patient on a case-by-case basis. Our efforts in obtaining reimbursement based on individual claims, including pursuing appeals or reconsiderations of claims denials, take a substantial amount of time, and bills may not be paid for many months, if at all. Furthermore, if a third-party payor denies coverage after final appeal, payment may not be received at all. We are working to decrease risks of nonpayment by implementing a revenue cycle management system. Third party payors are still establishing payment policies for panel-based tests.

Medicare and Medicaid. We believe that as much as 30% to 40% of our future market for our tests may be derived from patients covered by Medicare and Medicaid.

We cannot predict whether, or under what circumstances, payors will reimburse our proprietary tests. Payment amounts can also vary across individual policies. Denial of coverage by payors, or reimbursement at inadequate levels, would have a material adverse impact on market acceptance of our tests.

Legislative and Regulatory Changes Impacting Clinical Laboratory Tests

From time to time, Congress has revised the Medicare statute and the formulas it establishes for both the Medicare Clinical Laboratory Fee Schedule (CLFS) and the Physician Fee Schedule (PFS). The payment amounts under the Medicare fee schedules are important not only for our reimbursement under Medicare, but also because the schedule often is used as a basis for establishing the payment amounts set by other third party payors. For example, state Medicaid programs are prohibited from paying more than the Medicare fee schedule limit for clinical laboratory services furnished to Medicaid recipients.

Under the statutory formula for clinical laboratory fee schedule amounts, increases are made annually based on the Consumer Price Index for All Urban Consumers (CPI-U) as of June 30 for the previous twelve-month period. From 2004 through 2008, Congress eliminated the CPI-U update in the Medicare Prescription Drug, Improvement and Modernization Act of 2003. In addition, for years 2009 through 2013, the Medicare Improvements for Patients and Providers Act of 2008 ("MIPPA") mandated a 0.5% cut to the CPI-U. Accordingly, the update for 2009 was reduced to 4.5% and negative 1.9% for 2010. In March 2010, President Obama signed into law the Affordable Care Act (ACA), which, among other things, imposed additional cuts to the Medicare reimbursement for clinical laboratories. The ACA replaced the 0.5% cut enacted by MIPPA with a "productivity

adjustment" that reduced the CPI-U update in payments for clinical laboratory tests. In 2011, the productivity adjustment was -1.2%. In addition, the ACA includes a separate 1.75% reduction in the CPI-U update for clinical laboratories for the years 2011 through 2015. On February 22, 2012, President Obama signed the MCTRJCA, which mandated an additional change in reimbursement for clinical laboratory services payments. This legislation requires CMS to reduce the Medicare clinical laboratory fee schedule by 2% in 2013, which in turn will serve as a base for 2014 and subsequent years. Based on the changes required by ACA and MCTRJCA, payment for clinical laboratory services were reduced by approximately 0.25% for 2015.

With respect to our diagnostic services for which we are reimbursed under the Medicare Physician Fee Schedule, because of the statutory formula, the "Sustainable Growth Rate" (SGR), the rates would have decreased for the past several years if Congress failed to intervene. In the past, when the application of the statutory formula resulted in lower payment, Congress has passed interim legislation to prevent the reductions. On November 1, 2012, the Centers for Medicare & Medicaid Services (CMS) issued its 2013 Medicare Physician Fee Schedule Final Rule (the "Final Rule"). In the Final Rule, CMS called for a reduction of approximately 26.5% in the 2013 conversion factor that is used to calculate physician reimbursement. However, the American Taxpayer Relief Act of 2012, which was signed into law on January 2, 2013, prevented this proposed reduction and kept the existing reimbursement rate in effect until December 31, 2013.

For 2014, CMS projected the cut would be about 24%, unless Congress acted. However, on December 18, 2013, Congress passed legislation that enacted a 0.5% update in the conversion factor, which will be effective until March 31, 2014. On April 1, 2014, President Obama signed the Protecting Access to Medicare Act of 2014, or PAMA. PAMA extended the 0.5 percent increase through March 31, 2015 and made other changes to laboratory reimbursement discussed below. As discussed above, on April 16, 2015, President Obama signed MACRA, which will replace the SGR process with an alternative payment system.

In addition to the reductions described above, our Medicare payments under both the CLFS and the PFS are also subject to an additional 2% reduction, as a result of "sequestration." Payments are reduced automatically because the Joint Select Committee on Deficit Reduction, which was created by congress in 2011, was unable to agree on a set of deficit reduction recommendations for Congress to vote on. The reduction is scheduled to continue until 2025.

For the years ended December 31, 2016 and December 31, 2015, approximately 14% and 10%, respectively, of our total revenues are derived from Medicare generally and any changes to the physician fee schedule that result in a decrease in payment could adversely impact our revenues and results of operations.

In addition, periodically CMS also changes its payment policies related to laboratory reimbursement in ways that could have an impact on the revenues of the Company. For example, in 2013 Final Rule, CMS included a reduction of certain relative value units and geographic adjustment factors used to determine reimbursement for a number of commonly used pathology codes, including CPT codes 88300, 88302, 88304, and 88305. In particular, the 2013 Final Rule implemented a cut of approximately 33% in the global billing code for 88305 and a 52% cut in the Technical Component of that code. These codes describe services that we must perform in connection with our tests and we bill for these codes in connection with the services that we provide. In the 2013 Final Rule, CMS also announced how it intended to set prices for the new molecular diagnostic tests, for which the American Medical Association had adopted over 100 new codes. In that Rule, CMS announced it intended to continue to pay for the new molecular codes on the CLFS rather than move them to the Physician Fee Schedule, as some stakeholders had urged. It would then request that the Medicare Administrative Contractors "gapfill" the new codes and set an appropriate price for them. That "gapfilling" process took place over 2013 and CMS announced the new prices for these codes in September, 2013. The median of the prices set by the contractors became the new prices for these codes, effective January 1, 2014.

In the Proposed Physician Fee Schedule Rule for 2014, issued on July 8, 2013, CMS made two proposals that could affect laboratory reimbursement. First, CMS made a proposal to change how it calculates the RVUs used to calculate payments under the PFS. Under this proposal, where a service was paid at a lower rate in the hospital based on the hospital Outpatient Prospective Payment System (OPPS) than it is under the PFS, CMS proposed to reduce the RVUs for that service in order to equalize the payment between the two systems. This change, if implemented, would have resulted in approximately a 25% cut in aggregate payments to independent laboratories. In the Final Physician Rule for 2014, however, CMS chose not to implement this proposal, although it stated that it would develop a revised proposal in the future. At this point, it is impossible to know what the impact of such a proposal might be on the Company, were it to be proposed again and finalized.

In addition, in the 2014 Proposed Rule, CMS also noted that payments for many codes paid under the Clinical Laboratory Fee Schedule have not been revised to reflect technological advances that have occurred since the CLFS was first developed in 1984. CMS therefore proposed that it would begin to review all codes on the CLFS and adjust them to reflect technological changes, a process that it expected would take about five years. However, in April of 2014, Congress passed the Protecting Access to Medicare Act (PAMA), which eliminated CMS's authority to implement its plan to adjust payments based on technological advances. CMS has since stated it will not implement this proposal.

In PAMA, Congress also changed the way the Medicare will pay for clinical laboratory services. Under PAMA, certain laboratories will be required to report the amount that they are paid by third party payors for each test beginning in January 2016. CMS will use this data to calculate a weighted median for each test. That new price will become effective on January 1, 2018, although reductions will be phased in over time. This data reporting process will be repeated every three years for most tests, although laboratories that offer Advanced Diagnostic Laboratory Tests ("ADLTs") will have to report private payor rates for those tests every year. A test that meets the definition of an ADLT does not automatically become one under PAMA; rather, the laboratory offering the test voluntarily applies for ADLT designation for such a test. It is possible that some of our tests could be considered ADLTs, and if we applied for ADLT designation for such tests, we would be required to report prices for those tests annually. In addition, we may also be required to obtain a code from CMS or an entity that it designates for our tests that have not previously had a unique code. It is not known at this time how these changes will affect our reimbursement. As noted above, because of CMS's delay in issuing a Final Rule implementing these requirements, not all of the statutory deadlines will be met.

CMS made several other changes in recent Medicare Physician Fee Schedule Final Rules that impact our business. In the CY 2015 rule, CMS implemented a policy that bundles payment for the examination of 10 or more prostate biopsies for an individual patient, rather than paying separately for each individual procedure as had been done previously. This will result in a significant reduction in reimbursement on each of these procedures. That year it also developed new prices for Immunohistochemistry procedures, based on new CPT codes that were developed to describe the procedures. In the CY 2016 final rule, CMS finalized standard times for certain pathology clinical labor tasks, and in the CY 2017 final rule, it said it may adopt standard times for other pathology labor tasks in the future. In 2014, CMS also implemented an edit under its National Correct Coding Initiative, under which it will pay only for a single unit of service when we perform a FISH (Fluorescent In Situ Hybridization) test. As many FISH tests require two or more probes, this change will also reduce the reimbursement received by the Company.

Further, with respect to the Medicare Program, Congress has proposed on several occasions to impose a 20% coinsurance on patients for clinical laboratory tests reimbursed under CLFS, which would require us to bill patients for these amounts. Because of the relatively low reimbursement for many clinical laboratory tests, in the event that Congress ever were to enact such legislation, the cost of billing and collecting for these services would often exceed the amount actually received from the patient and effectively increase our costs of billing and collecting.

Finally, some of our Medicare claims may be subject to policies issued by Palmetto GBA, the current Medicare Administrative Contractor for North Carolina, South Carolina, Virginia and West Virginia. In 2013, Palmetto issued a Local Coverage Determination that affects coverage, coding and billing of many molecular diagnostic tests. Under this Local Coverage Determination, Palmetto will not cover any molecular diagnostic tests, including our tests, unless the test is expressly included in a National Coverage Determination issued by CMS or a Local Coverage Determination or coverage article issued by Palmetto. Currently, laboratory providers may submit coverage determination requests to Palmetto for consideration and apply for a unique billing code for each test (which is a separate process from the coverage determination). In the event that a non-coverage determination is issued, the laboratory must wait six months following the determination to submit a new request. In addition, effective May 1, 2012, Palmetto implemented the Molecular Diagnostic Services Program ("MolDx"), under which, among other things, a laboratory must use a newly-assigned unique test identifier when submitting a claim for a molecular test. These unique test identifiers enable Palmetto to measure utilization and apply coverage determinations. Denial of coverage by Palmetto, or reimbursement at inadequate levels, would have a material adverse impact on market acceptance of our tests. Certain other Medicare contractors are also following the policies adopted by Palmetto for molecular diagnostic tests.

Governmental Regulations

Clinical Laboratory Improvement Amendments of 1988 and State Regulation

As a diagnostic service provider, we are required to hold certain federal, state and local licenses, certifications and permits to conduct our business. As to federal certifications, in 1988, Congress passed the Clinical Laboratory Improvement Amendments ("CLIA") establishing quality standards for all laboratories testing to ensure the accuracy, reliability and timeliness of patient test results regardless of where the test was performed. Our U.S.-based laboratories are CLIA accredited. Under CLIA, a laboratory is defined as any facility which 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 of, or assessment of health. CLIA also requires that we hold a certificate applicable to the type of work we perform and comply with certain standards. CLIA further regulates virtually all clinical laboratories by requiring they be accredited by the federal government and comply with various operational, personnel, facilities administration, quality and proficiency requirements intended to ensure that their clinical laboratory testing services are accurate, reliable and timely. CLIA compliance and accreditation is also a prerequisite to be eligible to bill for services provided to governmental payor program beneficiaries. CLIA is user-fee funded. Therefore, all costs of administering the program must be covered by the regulated facilities, including certification and survey costs.

We are subject to survey and inspection every two years to assess compliance with program standards, and may be subject to additional unannounced inspections. Laboratories performing high complexity testing are required to meet more stringent requirements than laboratories performing less complex tests. In addition, a laboratory like ours that is certified as "high complexity" under CLIA may obtain analyte specific reagents, which are used as the basis for diagnostic tests that are developed and validated for use in examinations the laboratory performs itself known as laboratory-developed tests ("LDTs").

In addition to CLIA requirements, we participate in the oversight program of the College of American Pathologists ("CAP"). Under CMS requirements, accreditation by CAP is sufficient to satisfy the requirements of CLIA. Therefore, because we are accredited by CAP, we are deemed to also comply with CLIA. CLIA also 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 schemes. State laws may require that laboratory personnel meet certain qualifications, specify certain quality controls, or prescribe record maintenance requirements.

As to state laws, our clinical operations at our Rutherford and Los Angeles laboratories are required to meet certain state laboratory licensing and other requirements, which in some areas are more stringent than CLIA. Our laboratories are required hold the required licenses and accreditations obtained from the applicable state agencies in which we operate. State clinical laboratory laws generally require that laboratories and/or laboratory personnel meet certain qualifications. State clinical laboratory laws also generally require laboratories to specify certain quality assurance metrics and to maintain certain records. Several states, including Rhode Island, Florida, Maryland, New York and Pennsylvania, require that clinical laboratories hold licenses to test specimens from patients residing in those states, even though the laboratory is not located in such state. From time to time, other states may require out of state laboratories to obtain licensure in order to accept specimens from the state. If we identify any other state with such requirements or if we are contacted by any other state advising us of such requirements, we intend to follow instructions from the state regulators as to how we should comply with such requirements. In addition, the New York Department of Health separately approves certain LDTs offered in New York State. The Company has obtained the requisite approvals for its LDTs.

Our Rutherford laboratory is licensed and in good standing under the State Departments of Health standards for New Jersey, New York, Pennsylvania, California, Florida and Maryland . Our Los Angeles laboratory is licensed and in good standing in California, New York, Pennsylvania, Rhode Island, Florida and Maryland. If we are found to be out of compliance with applicable state statutory or regulatory standards we may be subject to suspension, restriction or revocation of our laboratory license or assessed civil money penalties. A noncompliant laboratory may also be found guilty of a misdemeanor under applicable state laws. A finding of noncompliance, therefore, may result in harm to our business.

FDA

The U.S. Food and Drug Administration ("FDA") regulates the sale or distribution, in interstate commerce, of medical devices under the Federal Food, Drug, and Cosmetic Act ("FDCA"), including in vitro diagnostic test kits, reagents and instruments used to perform diagnostic testing. Such devices must undergo pre-market review by FDA prior to commercialization unless the device is of a type exempted from such review by statute or pursuant to FDA's exercise of enforcement discretion. FDA, to date, has not exercised its authority to actively regulate the development and use of LDTs such as ours as medical devices and therefore we do not believe that our LDTs currently require pre-market clearance or approval.

Section 1143 of the Food and Drug Administration Safety and Innovation Act, signed by the President on July 9, 2012, requires FDA to notify Congress at least 60 days prior to issuing a draft or final guidance regulating LDTS and provide details of the anticipated action. On July 31, 2014, FDA notified Congress pursuant to the FDASIA that it intended to issue draft Guidances that would regulate LDTs. On October 3, 2014, the FDA issued two separate draft guidances: "Framework for Regulatory Oversight of Laboratory Developed Tests (LDTs)" ("The Framework Draft Guidance") and "FDA Notification and Medical Device Reporting for Laboratory Developed Tests" (the "Notification Draft Guidance."). In the Framework Draft Guidance, FDA states that after the Guidances are finalized, it no longer would exercise enforcement discretion with respect to most LDTs and instead would, regulate them in a risk-based manner consistent with the existing classification of medical devices.

The Framework Draft Guidance states that within six months after the Guidances were finalized, all laboratories would be required to give notice to the FDA and provide basic information concerning the nature of the LDTs offered. The FDA then would begin a phased-in review of the LDTs available, based on the risk associated with the tests. For the highest risk LDTs, which the FDA classifies as Class III devices, the Framework Draft Guidance stated that the FDA would begin to require premarket review within 12 months after the Guidance was finalized. Other high risk LDTs would be reviewed over the next four years and then lower risk tests (Class II tests) would be reviewed in the following four to nine years. The Framework Draft Guidance stated that FDA expected to issue a separate Guidance describing the criteria for its risk-based classification 18-24 months after the Guidances were finalized.

On November 18, 2016, the FDA stated that it would not be issuing final guidance on regulation of LDTs and, instead, it would outline its view of an appropriate risk-based approach to LDTs. On January 13, 2017, the FDA released a "Discussion Paper on Laboratory Developed Tests" that synthesizes the feedback that the agency received from various stakeholders on FDA regulation of LDTs "with the hope that it advances public discussion on LDT oversight." The FDA stated in the introduction to the discussion paper: "The synthesis does not represent the formal thinking of the FDA, nor is it enforceable…This document does not represent a final version of the LDT draft guidance documents that were published in 2014." Rather, its purpose is to allow for further public discussion and to give Congress a chance to develop a legislative solution. The discussion paper sets forth a prospective oversight framework that would focus on new and significantly modified high- and moderate-risk LDTs and under which LDTs marketed before the effective date of the framework would not be expected to comply with most or all FDA regulatory requirements. Also exempt would be low-risk LDTs, LDTs for rare diseases, and others. Premarket review would be phased in over four years, and those tests introduced between the framework's effective date and their phase-in date could continue to be offered for clinical use during the period of premarket review. FDA would expand its third-party premarket review program to include LDTs and coordinate with and leverage existing programs, such as New York State's Clinical Laboratory Evaluation Program and the programs run by organizations run by CLIA to accredit laboratories.

As the 115th Congress gets underway, a number of Congressional committees reportedly are working with various stakeholders to consider different approaches to regulation of LDTs. It is unclear at this time whether those committees and stakeholders can reach consensus around an approach and develop legislation and whether Congress would pass any such legislation.

We are monitoring developments in Congress, and in the meantime, we maintain our CLIA accreditation, which permits the use of LDTs for diagnostics purposes.

In addition to the Draft Guidances discussed above, the FDA has taken other actions that could have an impact on our business. In 2013, FDA issued Final Guidance for industry regarding appropriate labeling and distribution practices for in vitro diagnostic products intended for research or investigational use only. FDA's guidance cautions that labeling or distribution practices that conflict with research or investigational use (e.g., use in clinical diagnostic applications) could subject products shipped with research or investigational use labeling to all applicable requirements of the FDCA as well as enforcement action. As a result of this guidance from the FDA, component suppliers for our LDTs may no longer be willing to distribute components to our clinical laboratory. If this were to occur, we could not produce our LDTs.

On August 6, 2014, the FDA also issued its Final Guidance on In Vitro Companion Diagnostic Devices. According to the Guidance, companion diagnostic devices are in vitro diagnostic devices that provide information that is essential for the safe and effective use of a corresponding therapeutic product. The Guidance notes that in most circumstances, FDA expects to approve or clear a companion diagnostic device and its corresponding therapeutic product contemporaneously, based on the label of the therapeutic product. If it were determined that our tests qualified as Diagnostic Devices then we might be required to file for either a 510(k) or a PMA, depending on the nature of the particular test.

Post-market Regulation

Our Tissue of Origin® test obtained clearance under section 510(k) of the FDC Act. After a device, such as our Tissue of Origin® test, is cleared or approved for marketing, numerous and pervasive regulatory requirements continue to apply.

The FDA has broad regulatory compliance and enforcement powers. If the FDA determines that a company has failed to comply with applicable regulatory requirements, it can take a variety of compliance or enforcement actions, which may result in any of the following sanctions:

- warning letters, untitled letters, fines, injunctions, consent decrees and civil penalties;
- recalls, withdrawals, or administrative detention or seizure of products;
- operating restrictions or partial suspension or total shutdown of production;
- refusing or delaying requests for 510(k) marketing clearance or PMA approvals of new products or modified products;
- withdrawing 510(k) clearances or PMA approvals that have already been granted;
- refusal to grant export approvals for products; or

- criminal prosecution.

In addition, FDA could publicly issue a safety notice related to our test or request updates to our product labeling, including the addition of warnings, precautions, or contraindications.

Health Insurance Portability and Accountability Act, as amended by the Health Information Technology for Economic and Clinical Health Act ("HITECH Act")

Under the administrative simplification provisions of HIPAA, as amended by the HITECH Act, the United States Department of Health and Human Services has issued regulations which establish uniform standards governing the conduct of certain electronic health care transactions and protecting the privacy and security of Protected Health Information used or disclosed by health care providers and other covered entities. For further discussion of HIPAA and the impact on our business, see the section entitled *"Risk Factors-Risks Related to Our Business-We are required to comply with laws governing the transmission, security and privacy of health information that require significant compliance costs, and any failure to comply with these laws could result in material criminal and civil penalties."*

Federal, State and Foreign Fraud and Abuse Laws

The federal Anti-Kickback Statute prohibits, among other things, knowingly and willfully offering, paying, soliciting or receiving remuneration to induce or in return for purchasing, leasing, ordering or arranging for the purchase, lease or order of any health care item or service reimbursable under a governmental payor program. The definition of "remuneration" has been broadly interpreted to include anything of value, including gifts, discounts, credit arrangements, payments of cash, waivers of co-payments, ownership interests and providing anything at less than its fair market value. Recognizing that the Anti-Kickback Statute is broad and may technically prohibit many innocuous or beneficial arrangements within the health care industry, the Department of Health and Human Services has issued a series of regulatory "safe harbors." These safe harbor regulations set forth certain provisions, which, if met, will assure health care providers and other parties that they will not be prosecuted under the federal Anti- Kickback Statute. Although full compliance with these provisions ensures against prosecution under the federal Anti-Kickback Statute, the failure of a transaction or arrangement to fit within a specific safe harbor does not necessarily mean that the transaction or arrangement is illegal or that prosecution under the federal Anti-Kickback Statute will be pursued. For further discussion of the impact of federal and state health care fraud and abuse laws and regulations on our business, see the section entitled *"Risk Factors-Risks Related to Our Business-We are subject to federal and state health care fraud and abuse laws and regulations and could face substantial penalties if we are unable to fully comply with such laws."*

In addition to the administrative simplification regulations discussed above, HIPAA also created two new federal crimes: health care fraud and false statements relating to health care matters. The health care fraud statute prohibits knowingly and willfully executing a scheme to defraud any health care benefit program, including private payors. A violation of this statute is a felony and may result in fines, imprisonment or exclusion from governmental payor programs such as the Medicare and Medicaid programs. The false statements statute prohibits knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false, fictitious or fraudulent statement in connection with the delivery of or payment for health care benefits, items or services. A violation of this statute is a felony and may result in fines, imprisonment or exclusion from governmental payor programs.

Finally, another development affecting the health care 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 on any person or entity that, among other things, knowingly presents, or causes 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 actions on behalf of the federal government alleging that the defendant has defrauded the federal government by submitting a false claim to the federal government and permit such individuals to share in any amounts paid by the entity to the government in fines or settlement. In addition, various states have enacted false claim laws analogous to the federal False Claims Act, although many of these state laws apply where a claim is submitted to any third-party payor and not merely a governmental payor program. When an entity is determined to have violated the False Claims Act, it may be required to pay up to three times the actual damages sustained by the government, plus civil penalties ranging from $10,781 to $21,563 for each false claim violation that occurred after November 2, 2015. (Those whose false claims violations that occurred before November 2, 2015 could be liable for treble damages plus civil penalties ranging from $5,000 to $11,000 per violation.)

Additionally, in Europe various countries have adopted anti-bribery laws providing for severe consequences, in the form of criminal penalties and/or significant fines, for individuals and/or companies committing a bribery offence. Violations of these anti-bribery laws, or allegations of such violations, could have a negative impact on our business, results of operations and reputation. For instance, in the United Kingdom, under the new Bribery Act 2010, which went into effect in July 2011, a bribery occurs when a

person offers, gives or promises to give a financial or other advantage to induce or reward another individual to improperly perform certain functions or activities, including any function of a public nature. Bribery of foreign public officials also falls within the scope of the Bribery Act 2010. Under the new regime, an individual found in violation of the Bribery Act of 2010, faces imprisonment of up to 10 years. In addition, the individual can be subject to an unlimited fine, as can commercial organizations for failure to prevent bribery.

Physician Referral Prohibitions

Under a federal law directed at "self-referral," commonly known as the "Stark Law," there are prohibitions, with certain exceptions, on Medicare and Medicaid payments for laboratory tests referred by physicians who personally, or through a family member, have an investment or ownership interest in, or a compensation arrangement with, the clinical laboratory performing the tests. A person who engages in a scheme to circumvent the Stark Law's referral prohibition may be fined up to $100,000 for each such arrangement or scheme. 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 of up to $15,000 per bill submission, an assessment of up to three times the amount claimed and possible exclusion from participation in federal governmental payor programs. Bills submitted in violation of the Stark Law may not be paid by Medicare or Medicaid, and any person collecting any amounts with respect to any such prohibited bill is obligated to refund such amounts. Many states have comparable laws that are not limited to Medicare and Medicaid referrals.

We are also subject to California's Physician Ownership and Referral Act, or PORA as well as other state laws with self-referral restrictions.

Both the Stark Law and PORA contain an exception for referrals made by physicians who hold investment interests in a publicly traded company that has stockholders' equity exceeding $75 million at the end of its most recent fiscal year or on average during the previous three fiscal years, and which satisfies certain other requirements. In addition, both the Stark Law and PORA contain an exception for compensation paid to a physician for personal services rendered by the physician. Following our acquisition of Response Genetics in the fourth quarter of 2015, we have compensation arrangements with a number of physicians for personal services, such as speaking engagements and specimen tissue preparation. These arrangements were structured with terms intended to comply with the requirements of the personal services exception to Stark Law and PORA.

However, we cannot be certain that regulators would find these arrangements to be in compliance with Stark Law, PORA or similar state laws. If we are deemed to not be in compliance by the applicable regulators, we would be required to refund any payments we receive pursuant to a referral prohibited by these laws to the patient, the payor or the Medicare program, as applicable.

Corporate Practice of Medicine

Numerous states have enacted laws prohibiting business corporations, such as us, from practicing medicine and employing or engaging physicians to practice medicine, generally referred to as the prohibition against the corporate practice of medicine. These laws are designed to prevent interference in the medical decision-making process by anyone who is not a licensed physician. Violation of these laws may result in civil or criminal fines, as well as sanctions imposed against us and/or the professional through licensure proceedings.

Other Regulatory Requirements

Our laboratory is subject to federal, state and local regulations relating to the handling and disposal of regulated medical waste, hazardous waste and biohazardous waste, including chemical, biological agents and compounds, blood and bone marrow samples and other human tissue. Typically, we use outside vendors who are contractually obligated to comply with applicable laws and regulations to dispose of such waste. These vendors are licensed or otherwise qualified to handle and dispose of such waste.

OSHA has established extensive requirements relating to workplace safety for health care employers, including requirements to develop and implement programs to protect workers from exposure to blood-borne pathogens by preventing or minimizing any exposure through needle stick or similar penetrating injuries.

Segment and Geographical Information

We operate in one reportable business segment and derive revenue from multiple countries, with 96% and 95% coming from the United States in fiscal year 2016 and 2015, respectively.

Employees

As of December 31, 2016, we had a total of 142 full-time and 13 part-time employees, with 13 employees in sales and marketing, 86 employees in research and development and laboratory operations, 29 employees in quality assurance, client project and data management and logistics and 27 employees in general and administrative. None of our employees are represented by a labor union, and we consider our employee relations to be good.

Corporate and Available Information

We were incorporated in the State of Delaware on April 8, 1999. On July 16, 2014 we purchased substantially all of the assets of Gentris Corporation ("Gentris"), a laboratory specializing in pharmacogenomics profiling for therapeutic development, companion diagnostics and clinical trials. On August 18, 2014 we entered into two agreements by which we acquired BioServe Biotechnologies (India) Pvt. Ltd. (“BioServe”), a premier genomics services provider serving both the research and clinical markets in India, and as a result of the acquisition, BioServe became a subsidiary of ours. On October 9, 2015, Cancer Genetics acquired substantially all the assets and assumed certain liabilities of Response Genetics, Inc. ("Response Genetics") in connection with Response Genetics' filing of a chapter 11 petition for bankruptcy in the Delaware Bankruptcy Court for approximately $12.9 million, comprised of $7.5 million, in cash, and 788,584 shares of the Company's common stock, with the common stock being valued at $5.4 million.

Our principal executive offices are located at 201 Route 17 North, 2nd Floor, Rutherford, New Jersey 07070. Our telephone number is (201) 528-9200 and our corporate website address is *www.cancergenetics.com*. We include our website address in this annual report on Form 10-K only as an inactive textual reference and do not intend it to be an active link to our website. The information on our website is not incorporated by reference in this annual report on Form 10-K.

This annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and all amendments to those reports, as well as other documents we file with the U.S. Securities and Exchange Commission (“SEC”), are available free of charge through the Investors section of our website as soon as reasonably practicable after such material is electronically filed with or furnished to the SEC. The public can obtain documents that we file with the SEC at *www.sec.gov*.

This report includes the following trademarks, service marks and trade names owned by us: MatBA®, UroGenRA®, FHACT®, FReCaD™, Expand Dx™, Summation™, Select One®, DLBCL Complete™, Cervixcyte™, Leuka™, CGI®, CLL Complete®, Focus::NGS™, Focus::Myeloid™, Focus::CLL™, Tissue of Origin®, TOO®, Powered by CGI™ and Empowering Personal Cancer Treatment®. These trademarks, service marks and trade names are the property of Cancer Genetics, Inc. and its affiliates.

Item 1A. Risk Factors.

Risks Relating to Our Financial Condition and Capital Requirements

We have a history of net losses; we expect to incur net losses in the future, and we may never achieve sustained profitability.

We have historically incurred substantial net losses. We incurred losses of $15.8 million and $20.2 million for fiscal years ended December 31, 2016 and 2015, respectively. From our inception in April 1999 through December 31, 2016, we had an accumulated deficit of $114.0 million. We expect losses to continue principally as a result of ongoing research and development expenses and increased sales and marketing costs. These losses have had, and will continue to have, an adverse effect on our working capital, total assets and stockholders' equity. Because of the numerous risks and uncertainties associated with our research, development and commercialization efforts, we are unable to predict when we will become profitable, and we may never become profitable. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our inability to achieve and then maintain profitability would negatively affect our business, financial condition, results of operations and cash flows.

We may need to raise additional capital to fund our existing operations, to develop, validate and commercialize new tests and technologies, to expand our operations and to repay indebtedness.

We may need to raise additional financing to fund our operations, to develop, validate and commercialize new tests and technologies, to expand our operations and to repay indebtedness. At December 31, 2016, we had unrestricted cash and cash equivalents of $9.5 million. Net cash used in operating activities was $17.9 million and $13.6 million for the years ended December 31, 2016 and 2015.

On March 22, 2017, we restructured our debt with Silicon Valley Bank, by repaying the outstanding term loan and entering into a new two year $6.0 million asset-based revolving line of credit agreement. We concurrently entered into a new $6.0 million term loan agreement with Partners for Growth, which, on the day of closing, increased our indebtedness from $4.4 million to $6.0 million and, increased our available cash by $1.6 million. We will be able to borrow up to $6.0 million on the revolver, based on a formula tied to eligible accounts receivable, which will increase our indebtedness dollar for dollar. In connection with such debt restructuring we issued warrants to such lenders to purchase an aggregate of 443,262 shares of our common stock.

We believe that our current cash and availability under our revolving line of credit will support operations for at least 12 months from the date of this report. We can provide no assurances that any additional sources of financing will be available to us on favorable terms, if at all, when needed. Our forecast of the period of time through which our current financial resources will be adequate to support our operations and the costs to support our general and administrative, sales and marketing and research and development activities are forward-looking statements and involve risks and uncertainties.

Additional financing may be from the sale of equity or convertible or other debt securities in a public or private offering, from an additional or new credit facility or from a strategic partnership coupled with an investment in us or a combination of forms. We continue to evaluate our operations and take steps to improve our operating cash flow. We can provide no assurances that our current actions will be successful or that any additional sources of financing will be available to us on favorable terms, if at all, when needed. Furthermore, certain provisions of the securities purchase agreements we entered into in May 2016 and September 2016, may limit our ability to raise additional capital on favorable terms, or at all, including a prohibition on entering into variable rate transactions, such as an equity line, while the 5-year warrants issued in May and September 2016 remain outstanding, and rights of the investors to participate in future financings in an amount of up to 50% of such financing. Our failure to raise additional capital and in sufficient amounts when needed may significantly impact our ability to operate our business. For further discussion of our liquidity requirements, see the section titled “Liquidity and Capital Resources-Capital Resources and Expenditure Requirements.”

We also may need to raise capital to expand our business to meet our long-term business objectives, including to:

- increase our sales and marketing efforts to drive market adoption and address competitive developments;
- fund development, validation and marketing efforts of current and future tests;
- comply with current and evolving regulatory requirements;
- further expand our clinical laboratory operations;
- expand our technologies into other types of cancer;
- acquire, license or invest in technologies;

- acquire or invest in complementary businesses or assets; and
- finance capital expenditures and general and administrative expenses.

Our present and future funding requirements and our forecast of the period of time through which our current financial resources will be adequate to support our operations will depend on many factors, including:

- our ability to achieve revenue growth;
- our ability to continue to improve our operational efficiency;
- our ability to develop and obtain approvals for our new diagnostic tests and the costs associated with such research and development activities;
- our ability to execute on our marketing and sales strategy for our tests and gain acceptance of our tests in the market;
- our ability to obtain adequate reimbursement from governmental and other third-party payors for our tests and services;
- the costs, scope, progress, results, timing and outcomes of the clinical trials of our diagnostic tests;
- the costs of operating and enhancing our laboratory facilities;
- the costs of additional general and administrative personnel;
- the timing of and the costs involved in regulatory compliance, particularly if the regulations relating to laboratory developed tests ("LDTs") change;
- the timing of and costs involved in regulatory compliance, particularly if the regulations relating the PPACA (Patient Protection and Affordable Care Act) change;
- the costs of maintaining, expanding and protecting our intellectual property portfolio, including potential litigation costs and liabilities;
- the effect of competing technological and market developments;
- costs related to international expansion; and
- our ability to secure financing and the amount thereof.

The various ways we could raise additional capital carry potential risks. If we raise funds by issuing equity securities, dilution to our stockholders could result. Any equity securities issued also could provide for rights, preferences or privileges senior to those of holders of our common stock. If we raise funds by issuing debt securities, those debt securities would have rights, preferences and privileges senior to those of holders of our common stock. The terms of debt securities issued or borrowings pursuant to a credit agreement could impose significant restrictions on our operations and increase our interest expense. If we raise funds through collaborations and licensing arrangements, we might be required to relinquish significant rights to our technologies or tests, or grant licenses on terms that are not favorable to us.

Additional equity or debt financing might not be available on reasonable terms, if at all. If we cannot secure additional funding when needed, we may have to delay, reduce the scope of or eliminate one or more research and development programs or sales and marketing initiatives. In addition, we may have to work with a partner on one or more of our development programs, which could lower the economic value of those programs to us.

Our outstanding warrants may have an adverse effect on the market price of shares of our common stock

As of March 22, 2017, we had issued and outstanding warrants to purchase 7,475,961 shares of our common stock at a weighted-average exercise price of $4.61 per share, including warrants to purchase 2,869,801 shares of our common stock at a price of $2.25 per share and warrants to purchase 443,262 shares of our common stock at a price of $2.82 per share. We also have outstanding options to purchase an aggregate of 2,532,734 shares of our common stock. The sale, or even the possibility of sale, and the uncertainty with respect to the timing of any sales, of the shares underlying these securities, particularly the warrants, could have an adverse effect on the market price of our common stock and on our ability to obtain future financing at prices we deem satisfactory, or at all. If and to what extent these warrants and/or options are exercised, you may experience dilution to your holdings.

Risks Relating to Our Business and Strategy

If we are unable to increase sales of our laboratory tests and services or to successfully develop and commercialize other proprietary tests, our revenues will be insufficient for us to achieve profitability.

We currently derive substantially all of our revenues from our laboratory testing services. We have only recently begun offering our proprietary Focus::NGS® panels through our CLIA-certified, CAP-accredited and state licensed laboratories. We are in varying stages of research and development for other diagnostic tests that we may offer.

In recent years, we also have begun to provide our Biopharma Services. Biopharma Services are services and tests provided to pharmaceutical and biotech companies and clinical research organizations in connection with phase I, phase II or phase III studies for development of therapeutic drugs. The nature of these services is that they tend to come in relatively large projects but episodically, rather than providing steady sources of revenues. It is unclear at this stage of our development whether we will be able to maintain and grow the number of pharmaceutical and biotech companies and clinical research organizations who will avail themselves of our services, or how regular a flow of drug development projects we will be able to obtain from existing customers.

If we are unable to increase sales of our laboratory tests and services or to successfully develop, validate and commercialize other diagnostic tests, we will not produce sufficient revenues to become profitable.

If pathologists and oncologists decide not to order our diagnostic tests and/or pharmaceutical and biotech companies and clinical research organizations decide not to use our diagnostic tests and services in connection with their clinical trials, we may be unable to generate sufficient revenue to sustain our business.

To generate demand for our Clinical Services, we will need to educate oncologists and pathologists on the clinical utility, benefits and value of each type of test we provide through published papers, presentations at scientific conferences and one-on-one education sessions by members of our sales force. In addition, we will need to assure oncologists and pathologists of our ability to obtain and maintain coverage and adequate reimbursement from third-party payors. To generate demand for our Biopharma Services and Discovery Services, we need to educate pharmaceutical and biotech companies and clinical research organizations on the utility of our tests and services to improve the outcomes of clinical trials for new oncology drugs and more rapidly advance targeted therapies through the clinical development process through published papers, presentations at scientific conferences and one-on-one education sessions by members of our sales force. We may need to hire additional commercial, scientific, technical and other personnel to support this process. If we cannot convince medical practitioners, pharmaceutical and biotech companies or clinical research organizations to order our diagnostic tests or other future tests we develop, we will likely be unable to create demand for our tests in sufficient volume for us to achieve sustained profitability.

Our quarterly operating results may be subject to significant fluctuations and may be difficult to forecast.

In recent years, we have been expanding our Biopharma Services business. The nature of these services is that they tend to come in relatively large projects but episodically, rather than providing steady sources of revenues. The timing, size and duration of our contracts with pharmaceutical and biotech companies and clinical research organizations depend on the size, pace and duration of such customer's clinical trial, over which we have no control and sometimes limited visibility. In addition, our expense levels are based, in part, on expectation of future revenue levels. A shortfall in expected revenue could, therefore, result in a disproportionate decrease in our net income. As a result, our quarterly operating results may be subject to significant fluctuations and may be difficult to forecast.

The commercial success of our Clinical Services business could be compromised if third-party payors, including insurance companies, managed care organizations and Medicare, do not provide coverage and reimbursement, breach, rescind or modify their contracts or reimbursement policies or delay payments for our molecular diagnostic tests.

Pathologists and oncologists may not order our molecular diagnostic tests unless third-party payors, such as insurance companies, managed care organizations and government payors, such as Medicare and Medicaid, pay a substantial portion of the test price. Coverage and reimbursement by a third-party payor may depend on a number of factors, including a payor's determination that tests using our technologies are:

- not experimental or investigational;
- medically necessary;
- appropriate for the specific patient;
- cost-effective;
- supported by peer-reviewed publications; and
- included in clinical practice guidelines.

Uncertainty surrounds third-party payor coverage and reimbursement of any test incorporating new technology, including tests developed using our NGS panels. Technology assessments of new medical tests and devices conducted by research centers and other entities may be disseminated to interested parties for informational purposes. Third-party payors and health care providers may use such technology assessments as grounds to deny coverage for a test or procedure.

Because each payor generally determines for its own enrollees or insured patients whether to cover or otherwise establish a policy to reimburse our diagnostic tests, seeking payor approvals is a time-consuming and costly process. We cannot be certain that coverage for our tests will be provided in the future by additional third-party payors or that existing contracts, agreements or policy decisions or reimbursement levels will remain in place or be fulfilled under existing terms and provisions. If we cannot obtain coverage and reimbursement from private and governmental payors such as Medicare and Medicaid for our current tests, or new tests or test enhancements that we may develop in the future, our ability to generate revenues from our clinical services could be limited, which may have a material adverse effect on our financial condition, results of operations and cash flow. Further, we have experienced in the past, and will likely experience in the future, delays and temporary interruptions in the receipt of payments from third-party payors due to missing documentation and other issues, which could cause delay in collecting our revenue.

If we are unable to successfully validate our laboratory tests and services, we will not be able to increase revenues.

Pathologists and oncologists may not order our proprietary tests, and third-party payors may not reimburse for our tests, unless we are able to provide compelling evidence that the tests are useful to patient treatment and produce actionable information with respect to the diagnosis, prognosis and theranosis of the various cancers on which our work is focused. In addition, pharmaceutical and biotech companies and clinical research organizations may not order our proprietary tests unless we are able to provide compelling evidence that such tests improve the outcomes of clinical trials for new oncology drugs and allow pharmaceutical and biotech companies to more rapidly advance targeted therapeutics. While we have validated all of the tests that we currently offer, we believe that we will need to finance and successfully complete additional and more powerful studies, and then effectively disseminate the results of those studies, to drive widespread adoption of our tests and thereby increase our revenues.

If the market for our tests and services does not experience significant growth or if our tests and services do not achieve broad acceptance, our operations will suffer.

We cannot accurately predict the future growth rate or the size of the market for our tests and services. The expansion of this market depends on a number of factors, such as:

- the results of clinical trials;
- the cost, performance and reliability of our tests and services, and the tests and services offered by competitors;
- customers' perceptions regarding the benefits of our tests and services;
- customers' satisfaction with our tests and services; and
- marketing efforts and publicity regarding our tests and services.

If we are unable to manage growth in our business, our prospects may be limited and our future results of operations may be adversely affected.

We intend to continue with our research and development activities, our sales and marketing programs and other activities as needed to meet future demand. Any significant expansion may strain our managerial, financial and other resources. If we are unable to manage such growth, our business, operating results and financial condition could be adversely affected. We will need to improve continually our operations, financial and other internal systems to manage its growth effectively, and any failure to do so may lead to inefficiencies and redundancies, and result in reduced growth prospects and diminished operational results.

Our business depends on our ability to successfully commercialize novel cancer diagnostic tests and services, which is time consuming and complex, and our development efforts may fail.

Our current business strategy focuses on discovering, developing and commercializing molecular, genomic and genetic diagnostic tests and services. We believe the success of our business depends on our ability to fully validate and commercialize our existing diagnostic tests and services and to develop and commercialize new diagnostic tests. We have multiple tests we are currently offering and in development, but research, development and commercialization of diagnostic tests is time-consuming, uncertain and complex.

Tests we currently offer in our laboratory, or any additional technologies that we may develop, may not succeed in reliably diagnosing or predicting the recurrence of cancers with the sensitivity and specificity necessary to be clinically useful, and thus may not succeed commercially. In addition, prior to or an in continuing in conjunction with commercializing our diagnostic tests, we must undertake time-consuming and costly development activities, including clinical studies, and obtain regulatory

clearance or approval, which may be denied. This development process involves a high degree of risk, substantial expenditures and will occur over several years. Our development efforts may fail for many reasons, including:

- failure of the tests at the research or development stage;
- difficulty in accessing archival tissue samples, especially tissue samples with known clinical results; or
- lack of sufficient clinical validation data to support the effectiveness of the test.

Tests that appear promising in early development may fail to be validated in subsequent studies, and even if we achieve positive results, we may ultimately fail to obtain the necessary regulatory clearances or approvals. There is substantial risk that our research and development projects will not result in commercial tests, and that success in early clinical trials will not be replicated in later studies. At any point, we may abandon development of a test or be required to expend considerable resources repeating clinical trials, which would adversely impact the timing for generating potential revenues from that test. In addition, as we develop tests, we will have to make significant investments in research, development and marketing resources. If a clinical validation study of a particular test then fails to demonstrate the outlined goals of the study, we might choose to abandon the development of that test. Further, our ability to develop and launch diagnostic tests will likely depend on our receipt of additional funding. If our discovery and development programs yield fewer commercial tests than we expect, we may be unable to execute our business plan, which may adversely affect our business, financial condition and results of operations.

We may acquire other businesses or form joint ventures or make investments in other companies or technologies that could harm our operating results, dilute our stockholders' ownership, increase our debt or cause us to incur significant expense.

As part of our business strategy, we may pursue other acquisitions of businesses and assets. We also may pursue strategic alliances and joint ventures that leverage our core technology and industry experience to expand our offerings or distribution. For example, we acquired Response Genetics, Inc. in 2015 and Gentris Corporation in 2014, and we entered into a joint venture in May 2013 with Mayo Foundation for Education and Research. We have developed experience with acquiring other companies and forming strategic alliances and joint ventures. We may not be able to find suitable partners or acquisition candidates, and we may not be able to complete such transactions on favorable terms, if at all. If we make any acquisitions, we may not be able to integrate these acquisitions successfully into our existing business, and we could assume unknown or contingent liabilities. Any future acquisitions also could result in significant write-offs or the incurrence of debt and contingent liabilities, any of which could have a material adverse effect on our financial condition, results of operations and cash flows. Integration of an acquired company also may disrupt ongoing operations and require management resources that would otherwise focus on developing our existing business. We may experience losses related to investments in other companies, which could have a material negative effect on our results of operations. We may not identify or complete these transactions in a timely manner, on a cost-effective basis, or at all, and we may not realize the anticipated benefits of any acquisition, technology license, strategic alliance or joint venture.

To finance any acquisitions or joint ventures, we may choose to issue shares of our common stock as consideration, which would dilute the ownership of our stockholders. If the price of our common stock is low or volatile, we may not be able to acquire other companies or fund a joint venture project using our stock as consideration. Alternatively, it may be necessary for us to raise additional funds for acquisitions through public or private financings. Additional funds may not be available on terms that are favorable to us, or at all.

We conduct business in a heavily regulated industry, and if we are unable to obtain regulatory clearance or approvals in the United States, if we experience delays in receiving clearance or approvals, or if we do not gain acceptance from other laboratories of any cleared or approved diagnostic tests at their facilities, our growth strategy may not be successful.

We currently offer our proprietary tests in conjunction with our comprehensive panel of laboratory services in our CLIA-certified and CAP-accredited laboratory. Because we currently offer these tests and services solely for use within our laboratory, we believe we may market the tests as laboratory developed tests (LDTs), which are tests designed, manufactured and used within a single laboratory. Although the Food and Drug Administration ("FDA") has statutory authority to assure that medical devices, including LDTs, are safe and effective for their intended uses, the FDA has generally exercised its enforcement discretion and not enforced applicable regulations with respect to LDTs. Specifically, under current FDA enforcement policies and guidance, LDTs generally do not require FDA premarket clearance or approval before commercialization, and we have marketed our LDTs on that basis. 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, 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, prospects, results of operations or financial condition.

If we were to offer our tests through third-party laboratories, these tests would most likely not be subject to the FDA's current exercise of enforcement discretion over LDTs, and would be subject to the applicable medical device regulations. For example, these tests could become subject to the FDA's requirements for premarket review. Unless an exemption applies, generally, before a new medical device or a new use for a medical device may be sold or distributed in the United States, the medical device must receive either FDA clearance of a 510(k) pre-market notification or pre-market approval. As a result, before we can market or distribute our tests in the United States for use by other clinical testing laboratories, we must first obtain pre-market clearance or pre-market approval from FDA. We have not yet applied for clearance or approval from FDA, and would need to complete additional validations before we are ready to apply. We believe it would likely take two years or more to conduct the studies and trials necessary to obtain approval from FDA to commercially launch any of our proprietary products outside of our clinical laboratory. Once we do apply, we may not receive FDA clearance or approval for the commercial use of our tests on a timely basis, or at all. If we are unable to obtain clearance or approval or if clinical diagnostic laboratories do not accept our tests, our ability to grow our business by deploying our tests could be compromised.

The Federal Food and Drug Administration may impose additional regulatory obligations and costs upon our business.

On October 3, 2014 the FDA issued two draft guidance documents regarding its intent to modify its policy of enforcement discretion and increase oversight over LDTs. The two draft guidance documents are entitled “Framework for Regulatory Oversight of Laboratory Developed Tests (LDTs)” (the “Framework Draft Guidance”) and “FDA Notification and Medical Device Reporting for Laboratory Developed Test (LDTs)" (the "Notification Draft Guidance”). In the Framework Draft Guidance, FDA stated that after the Guidances are finalized, it no longer would exercise enforcement discretion with respect to most LDTs and instead would regulate them in a risk-based manner consistent with the existing classification of medical devices. The Framework Draft Guidance stated that within six months after the Guidances were finalized, all laboratories would be required to give notice to the FDA and provide basic information concerning the nature of the LDTs offered. The FDA then would begin a phased-in review of the LDTs available, based on the risk associated with the tests. For the highest risk LDTs, which the FDA classifies as Class III devices, the Framework Draft Guidance stated that the FDA would begin to require premarket review within 12 months after the Guidance was finalized. Other high risk LDTs would be reviewed over the next four years and then lower risk tests (Class II tests) would be reviewed in the following four to nine years. The Framework Draft Guidance stated that FDA expected to issue a separate Guidance describing the criteria for its risk-based classification 18-24 months after the Guidances were finalized.

On November 18, 2016, the FDA stated that it would not be issuing final guidance on regulation of LDTs and, instead, it would outline its view of an appropriate risk-based approach to LDTs. On January 13, 2017, the FDA released a “Discussion Paper on Laboratory Developed Tests” that synthesizes the feedback that the agency received from various stakeholders on FDA regulation of LDTs “with the hope that it advances public discussion on LDT oversight.” The FDA stated in the introduction to the discussion paper: “The synthesis does not represent the formal thinking of the FDA, nor is it enforceable…This document does not represent a final version of the LDT draft guidance documents that were published in 2014.” Rather, its purpose is to allow for further public discussion and to give Congress a chance to develop a legislative solution. As the 115th Congress gets underway, a number of Congressional committees reportedly are working with various stakeholders to consider different approaches to regulation of LDTs. It is unclear at this time whether those committees and stakeholders can reach consensus around an approach and develop legislation and whether Congress would pass any such legislation.

If we and our tests become subject to FDA's enforcement of its medical device regulations with respect to LDTs, we may be subject to significant and onerous regulatory obligations. See section entitled “Risk Factors-Regulatory Risks Relating to Our Business-If the FDA regulates LDTs as proposed, then it would classify LDTs according to the current system used to regulate medical devices. Under that system, there are three different classes of medical devices, with the requirements becoming more stringent depending on the Class.”

If we are unable to execute our marketing strategy for our tests and our tests are unable to gain acceptance in the market, we may be unable to generate sufficient revenue to sustain our business.

Although we believe that our tests represent promising commercial opportunities, our tests may never gain significant acceptance in the marketplace and therefore may never generate substantial revenue or profits for us. We need to continue to develop a market for our tests through physician education and awareness programs. Gaining acceptance in medical communities requires that we perform additional studies after validating the efficacy of our tests and services for the diagnosis, prognosis and treatment of cancer, and that we obtain acceptance of the results of those studies using our tests for publication in leading peer-reviewed medical journals. The results of any studies are always uncertain and even if we believe such studies demonstrate the value of our tests, they process of publication in leading medical journals is subject to a peer review process and peer reviewers may not consider the results of our studies sufficiently novel or worthy of publication. Failure to have our

studies published in peer-reviewed journals would limit the adoption of our tests. Our ability to successfully market the tests that we may develop will depend on numerous factors, including:

- whether health care providers believe our diagnostic tests provide clinical utility;
- whether the medical community accepts that our diagnostic tests are sufficiently sensitive and specific to be meaningful in patient care and treatment decisions; and
- whether health insurers, government health programs and other third-party payors will cover and pay for our diagnostic tests and, if so, whether they will adequately reimburse us.

Failure to achieve widespread market acceptance of our diagnostic tests would materially harm our business, financial condition and results of operations.

Our agreement with Mayo Clinic may not proceed successfully.

In November 2011, we entered into an affiliation agreement with the Mayo Foundation for Medical Education and Research, subsequently amended. Under the agreement, we formed a joint venture in May 2013 to focus on developing oncology diagnostic services and tests utilizing next generation sequencing. We have made $2.0 million in capital contributions to that joint venture through December 31, 2016. We estimate additional capital contributions by us of up to $4.0 million may be required over the next two years, subject to the joint venture achieving certain operational milestones. The operation of the joint venture may also divert management time from operating our business. No assurances can be given that we will be able to fully fund our obligations under the joint venture agreement, or that, even if funded, the joint venture will ever achieve the research, development and commercial objectives currently contemplated by the parties, such as the discovery and commercialization of new diagnostic tests utilizing next-generation sequencing. If the development efforts of the joint venture do not result in commercially successful tests or services, it will have an adverse effect on our business, financial condition and results of operations.

If we cannot develop tests to keep pace with rapid advances in technology, medicine and science, our operating results and competitive position could be harmed.

In recent years, there have been numerous advances in technologies relating to the diagnosis and treatment of cancer. There are several new cancer drugs under development that may increase patient survival time. There have also been advances in methods used to analyze very large amounts of genomic information. We must continuously develop new tests and enhance our existing tests to keep pace with evolving standards of care. Our existing tests could become obsolete unless we continually innovate and expand them to demonstrate benefit in patients treated with new therapies. New cancer therapies typically have only a few years of clinical data associated with them, which limits our ability to perform clinical studies and correlate sets of genes to a new treatment's effectiveness. If we cannot adequately demonstrate the applicability of our tests to new treatments, sales of our tests and services could decline, which would have a material adverse effect on our business, financial condition and results of operations.

If our tests do not continue to perform as expected, our operating results, reputation and business will suffer.

Our success depends on the market's confidence that we can continue to provide reliable, high-quality diagnostic tests. We believe that our customers are likely to be particularly sensitive to test defects and errors. As a result, the failure of our tests or services to perform as expected would significantly impair our reputation and the public image of our tests and services, and we may be subject to legal claims arising from any defects or errors.

There is a scarcity of experienced professionals in our industry. If we are not able to retain and recruit personnel with the requisite technical skills, we may be unable to successfully execute our business strategy.

The specialized nature of our industry results in an inherent scarcity of experienced personnel in the field. Our future success depends upon our ability to attract and retain highly skilled personnel (including medical, scientific, technical, commercial, business, regulatory and administrative personnel) necessary to support our anticipated growth, develop our business and perform certain contractual obligations. Given the scarcity of professionals with the scientific knowledge that we require and the competition for qualified personnel among life science businesses, we may not succeed in attracting or retaining the personnel we require to continue and grow our operations. The loss of a key employee, the failure of a key employee to perform in his or her current position or our inability to attract and retain skilled employees could result in our inability to continue to grow our business or to implement our business strategy.

Our inability to attract, hire and retain a sufficient number of qualified sales professionals would hamper our ability to increase demand for our tests, to expand geographically and to successfully commercialize any other diagnostic tests or products we may develop.

Our success in selling our clinical laboratory services, biopharma services, discovery services, diagnostic tests and any other tests or products that we are able to develop will require us to expand our sales force in the United States and internationally by recruiting additional sales representatives with extensive experience in oncology and close relationships with medical oncologists, surgeons, pathologists and other hospital personnel, as well as pharmaceutical and biotech companies and clinical research organizations. To achieve our marketing and sales goals, we will need to continue to expand our sales and commercial infrastructure. Sales professionals with the necessary technical and business qualifications are in high demand, and there is a risk that we may be unable to attract, hire and retain the number of sales professionals with the right qualifications, scientific backgrounds and relationships with decision-makers at potential customers needed to achieve our sales goals. We may face competition from other companies in our industry, some of whom are much larger than us and who can pay greater compensation and benefits than we can, in seeking to attract and retain qualified sales and marketing employees. If we are unable to hire and retain qualified sales and marketing personnel, our business will suffer.

We have indebtedness with restrictive covenants that limit our ability to obtain additional debt financing and that requires us to comply with certain financial covenants, which could have a material adverse effect on our financial condition, our ability to fund operations, and react to changes in our business.

As of March 22, 2017, we had no indebtedness for borrowed money under our new credit facility with Silicon Valley Bank and $6.0 million under our new term loan with Partners for Growth due on March 22, 2020. However, we do expect to borrow under the new credit facility with Silicon Valley Bank to fund our future working capital requirements, which debt will be due on March 22, 2019. We are required to comply with certain financial covenants and restricts us from, among other things, paying cash dividends, incurring debt and entering into certain transactions without the prior consent of the lenders. Repayments of amounts borrowed under the credit facility may be accelerated if an event of default occurs, which includes, among other things, a violation of such financial covenants and negative covenants. Our debt and related covenants could limit our ability to satisfy our obligations, limit our ability to operate our business and impair our competitive position. For example, it could:

- require us to dedicate a substantial portion of our cash flow from operations to payments on our debt, reducing the availability of our cash flow from operations to fund working capital, capital expenditures or other general corporate purposes;
- limit our flexibility in planning for, or reacting to, changes in our business and industry;
- place us at a disadvantage compared to competitors that may have proportionately less debt; and
- increase our cost of borrowing.

If our laboratory facilities become damaged or inoperable, or we are required to vacate any facility, our ability to provide services and pursue our research and development efforts may be jeopardized.

We currently derive substantially all of our revenues from our laboratory testing services. We do not have any clinical reference laboratory facilities outside of our facilities in Rutherford, New Jersey, Morrisville, North Carolina, Hyderabad, India and Los Angeles, California. Our facilities and equipment could be harmed or rendered inoperable by natural or man-made disasters, including fire, flooding and power outages, which may render it difficult or impossible for us to perform our tests or provide laboratory services for some period of time. The inability to perform our tests or the backlog of tests that could develop if any of our facilities is inoperable for even a short period of time may result in the loss of customers or harm to our reputation or relationships with collaborators, and we may be unable to regain those customers or repair our reputation in the future. Furthermore, our facilities and the equipment we use to perform our research and development work could be costly and time-consuming to repair or replace.

Additionally, a key component of our research and development process involves using biological samples and the resulting data sets and medical histories, as the basis for our diagnostic test development. In some cases, these samples are difficult to obtain. If the parts of our laboratory facilities where we store these biological samples are damaged or compromised, our ability to pursue our research and development projects, as well as our reputation, could be jeopardized. We carry insurance for damage to our property and the disruption of our business, but this insurance may not be sufficient to cover all of our potential losses and may not continue to be available to us on acceptable terms, if at all.

Further, if any of our laboratories became inoperable we may not be able to license or transfer our proprietary technology to a third-party, with established state licensure and CLIA certification under the scope of which our diagnostic tests could be

performed following validation and other required procedures, to perform the tests. Even if we find a third-party with such qualifications to perform our tests, such party may not be willing to perform the tests for us on commercially reasonable terms. Moreover, we believe our tests are currently subject to an exercise of enforcement discretion by the FDA because the tests are considered LDTs. If we are required to find a third-party laboratory to conduct our testing services, we believe the FDA would consider our tests to be medical devices that are no longer subject to its exercise of enforcement discretion for LDTs. In that case, we may be required to obtain premarket clearance or approval prior to offering our tests, which would be time-consuming and costly and could result in delays in our ability to sell or offer our tests.

If we cannot compete successfully with our competitors, we may be unable to increase or sustain our revenues or achieve and sustain profitability.

We face competition from mainstream diagnostic methods that pathologists and oncologists use and have used for many years. It may be difficult to change the methods or behavior of the referring pathologists and oncologists to incorporate our molecular diagnostic testing in their practices. We believe that we can introduce our diagnostic tests successfully due to their clinical utility and the desire of pathologists and oncologists to find solutions for more accurate diagnosis, prognosis and personalized treatment options for cancer patients.

We also face competition from companies that currently offer or are developing products to profile genes, gene expression or protein biomarkers in various cancers. Precision medicine is a new area of science, and we cannot predict what tests others will develop that may compete with or provide results superior to the results we are able to achieve with the tests we develop. Our competitors include public companies such as Abbott Laboratories, Inc., bioTheranostics, Inc., Foundation Medicine, Inc., Genomic Health, Inc., Invitae Corp., Johnson & Johnson, Myriad Genetics Inc., Nant Health, NeoGenomics, Inc., Quest Diagnostics, Roche Molecular Systems, Inc., and many private companies. We expect that pharmaceutical and biotech companies will increasingly focus attention and resources on the personalized diagnostic sector as the potential and prevalence increases for molecularly targeted oncology therapies approved by FDA along with companion diagnostics.

With respect to our clinical laboratory business we face competition from companies such as Bio-Reference Laboratories, Inc. (a division of Opko), Genoptix Medical Laboratory, Invitae Corp., LabCorp, NeoGenomics, Inc., and Quest Diagnostics.

Many of our present and potential competitors have widespread brand recognition and substantially greater financial and technical resources and development, production and marketing capabilities than we do. Others may develop lower-priced, less complex tests that payors, pathologists and oncologists could view as functionally equivalent to our tests, which could force us to lower the list price of our tests and impact our operating margins and our ability to achieve profitability. In addition, technological innovations that result in the creation of enhanced diagnostic tools may enable other clinical laboratories, hospitals, physicians or medical providers to provide specialized diagnostic services similar to ours in a more patient-friendly, efficient or cost-effective manner than is currently possible. If we cannot compete successfully against current or future competitors, we may be unable to increase market acceptance and sales of our tests, which could prevent us from increasing or sustaining our revenues or achieving or sustaining profitability.

A small number of test ordering sites account for most of the sales of our tests and services. If any of these sites orders fewer tests from us for any reason, our revenues could decline.

Due to the early stage nature of our business and our limited sales and marketing activities to date, we have historically derived a significant portion of our revenue from a limited number of test ordering sites, although the test ordering sites that generate a significant portion of our revenue may change from period to period. Our test ordering sites are largely hospitals, cancer centers, reference laboratories and physician offices, as well as pharmaceutical and biotech companies as part of a clinical trial. Oncologists and pathologists at these sites order the tests on behalf of the needs of their oncology patients or as part of a clinical trial sponsored by a pharmaceutical and biotech company in which the patient is being enrolled. The top five test ordering clients during 2016 and 2015 accounted for 31% and 49%, respectively, of our testing volumes, with 6% and 18%, respectively, of the test volume coming from community hospitals. During the year ended December 31, 2016, one Biopharma client accounted for approximately 16% of our revenue. During the year ended December 31, 2015 one Biopharma client accounted for approximately 19% of our revenue.

If we fail to perform our Biopharma services in accordance with contractual and regulatory requirements, and ethical considerations, we could be subject to significant costs or liability.

Through our Biopharma services offering, we contract with pharmaceutical and biotech companies to perform a wide range of services to assist them in bringing new therapeutics to market. Our services include monitoring clinical trials, data and laboratory analysis, clinical trial design consulting, data capture and other related services. Such services are complex and

subject to contractual requirements, regulatory standards and ethical considerations. For example, we are subject to regulation by the FDA, and comparable foreign regulatory authorities relating to our activities in conducting pre-clinical studies and clinical trials. If we fail to perform our services in accordance with these requirements, regulatory authorities may take action against us or our customers. Such actions may include failure of such regulatory authority to grant marketing approval of our customers' products, imposition of holds or delays, suspension or withdrawal of approvals, rejection of data collected, laboratory license revocation, product recalls, operational restrictions, civil or criminal penalties or prosecutions, damages or fines. Any such action could have a material adverse effect on our business.

We expect to continue to incur significant expenses to develop and market our diagnostic tests, which could make it difficult for us to achieve and sustain profitability.

In recent years, we have incurred significant costs in connection with the development of our diagnostic tests. For the year ended December 31, 2016, our research and development expenses were $6.0 million, which was 22% of our revenue and our sales and marketing expenses were $4.7 million, which was 17% of revenue. For the year ended December 31, 2015, our research and development expenses were $5.5 million, which was 30% of our net revenue and our sales and marketing expenses were $5.3 million, which was 29% of revenue. We expect our expenses to continue to increase, in absolute dollars, for the foreseeable future as we seek to expand the clinical utility of our diagnostic tests, drive adoption of and reimbursement for our diagnostic tests and develop new tests. As a result, we will need to generate significant revenues in order to achieve sustained profitability.

We depend on certain collaborations with third parties for the supply of certain tissue samples and biological materials that we use in our research and development efforts. If the costs of such collaborations increase or our third party collaborators terminate their relationship with us, our business may be materially harmed.

Under standard clinical practice in the United States, tumor biopsies removed from patients are chemically preserved, embedded in paraffin wax and stored. Our clinical development relies on our ability to access these archived tumor biopsy samples, as well as information pertaining to their associated clinical outcomes. Other companies often compete with us for access. Additionally, the process of negotiating access to archived samples is lengthy, because it typically involves numerous parties and approvals to resolve complex issues such as usage rights, institutional review board approval, privacy rights, publication rights, intellectual property ownership and research parameters.

We have collaborative relationships with Memorial Sloan-Kettering Cancer Center, Mayo Clinic, North Shore-Long Island Jewish Health System, the National Cancer Institute, the Cleveland Clinic and other institutions who provide us with tissue samples and other biological materials that we use in developing and validating our tests. We do not have any written arrangement with certain third party collaborators, and in many of the cases in which the arrangements are in writing, our collaborative relationships are terminable on 30 days' notice or less. If one or more collaborators terminate their relationship with us, we will need to identify other third parties to provide us with tissue samples and biological materials, which could result in a delay in our research and development activities and negatively affect our business.

We currently rely on a limited number of suppliers for the reagents and chemistry related to our NGS panels. Any problems, such as disruption of the supply chain or lack of visibility, experienced by these suppliers could result in a delay or interruption in the supply of our NGS panels to us until the problem is cured or until we locate and qualify an alternative source of supply.

The design of our NGS panels is currently optimized using certain reagents and chemistry, which we have incorporated into our processes, equipment and protocols. We currently purchase these components from a limited number of suppliers. If one or more of these suppliers were to delay or stop producing the required reagents, or if the prices charged us were to increase significantly, we would need to identify another supplier and optimize our NGS panels using new reagents. We could experience delays in performing the NGS panels while finding other acceptable suppliers, which could impact our results of operations.

If we were sued for product liability or professional liability, we could face substantial liabilities that exceed our resources.

The marketing, sale and use of our tests could lead to the filing of product liability claims were someone to allege that our tests failed to perform as designed. We may also be subject to liability for errors in the test results we provide to pathologists and oncologists or for a misunderstanding of, or inappropriate reliance upon, the information we provide. A product liability or professional liability claim could result in substantial damages and be costly and time-consuming for us to defend.

Although we believe that our existing product and professional liability insurance is adequate, our insurance may not fully protect us from the financial impact of defending against product liability or professional liability 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 lawsuit could damage our reputation, result in the recall of our tests, or cause current clinical partners to terminate existing agreements and potential clinical partners to seek other partners, any of which could impact our results of operations.

If we use biological and hazardous materials in a manner that causes injury, we could be liable for damages.

Our activities currently require the controlled use of potentially harmful biological materials and hazardous materials and chemicals. We cannot eliminate the risk of accidental contamination or injury to employees or third parties from the use, storage, handling or disposal of these materials. In the event of contamination or injury, we could be held liable for any resulting damages, and any liability could exceed our resources or any applicable insurance coverage we may have. Additionally, we are subject to, on an ongoing basis, federal, state and local laws and regulations governing the use, storage, handling and disposal of these materials and specified waste products. The cost of compliance with these laws and regulations may become significant and could have a material adverse effect on our financial condition, results of operations and cash flows. In the event of an accident or if we otherwise fail to comply with applicable regulations, we could lose our permits or approvals or be held liable for damages or penalized with fines.

If we cannot support demand for our tests, including successfully managing the evolution of our technology and manufacturing platforms, our business could suffer.

As our test volume grows, we will need to increase our testing capacity, implement increases in scale and related processing, customer service, billing, collection and systems process improvements and expand our internal quality assurance program and technology to support testing on a larger scale. We will also need additional certified laboratory scientists and other scientific and technical personnel to process these additional tests. Any increases in scale, related improvements and quality assurance may not be successfully implemented and appropriate personnel may not be available. As additional tests are commercialized, we will need to bring new equipment on line, implement new systems, technology, controls and procedures and hire personnel with different qualifications. Failure to implement necessary procedures or to hire the necessary personnel could result in a higher cost of processing or an inability to meet market demand. We cannot assure you that we will be able to perform tests on a timely basis at a level consistent with demand, that our efforts to scale our commercial operations will not negatively affect the quality of our test results or that we will respond successfully to the growing complexity of our testing operations. If we encounter difficulty meeting market demand or quality standards for our tests, our reputation could be harmed and our future prospects and business could suffer, which may have a material adverse effect on our financial condition, results of operations and cash flows.

We depend on our information technology and telecommunications systems, and any failure of these systems could harm our business.

We depend on information technology and telecommunications systems for significant aspects of our operations. In addition, our third-party billing and collections provider depends upon telecommunications and data systems provided by outside vendors and information we provide on a regular basis. These information technology and telecommunications systems support a variety of functions, including test processing, sample tracking, quality control, customer service and support, billing and reimbursement, research and development activities and our general and administrative activities. Information technology and telecommunications systems are vulnerable to damage from a variety of sources, including telecommunications or network failures, malicious human acts and natural disasters. Moreover, despite network security and back-up measures, some of our servers are potentially vulnerable to physical or electronic break-ins, computer viruses and similar disruptive problems. Despite the precautionary measures we have taken to prevent unanticipated problems that could affect our information technology and telecommunications systems, failures or significant downtime of our information technology or telecommunications systems or those used by our third-party service providers could prevent us from processing tests, providing test results to pathologists, oncologists, billing payors, processing reimbursement appeals, handling patient or physician inquiries, conducting research and development activities and managing the administrative aspects of our business. Any disruption or loss of information technology or telecommunications systems on which critical aspects of our operations depend could have an adverse effect on our business.

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 fines, penalties, liability, and adverse effects to our business and our reputation.

In the ordinary course of our business, we and our third-party billing and collections provider collect and store sensitive data, including legally protected health information, personally identifiable information, intellectual property, and proprietary business information owned or controlled by ourselves or our customers, payors, and pharmaceutical and biotech partners. The secure processing, storage, maintenance, and transmission of this critical information is vital to our operations and business strategy, and we devote significant resources to protecting such 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, may be vulnerable to attacks by hackers or viruses or breached due to employee error, malfeasance, or other disruptions. Any such breach or interruption could compromise our networks, and the information stored there could be accessed by unauthorized parties, publicly disclosed, lost, or stolen. Any such improper access or disclosure, or loss of information could require us to provide notice to the affected individuals, the press, and regulatory bodies, result in legal claims or proceedings, liability, fines and penalties under laws that protect the privacy of personal information, such as the Health Insurance Portability and Accountability Act of 1996 ("HIPAA"), the Health Information Technology for Economic and Clinical Health Act ("HITECH Act"), their implementing regulations, and similar state laws. Unauthorized access, loss, or dissemination could also disrupt our operations, including our ability to conduct our analyses, provide test results, bill payors or patients, process claims and appeals, provide customer assistance services, conduct research and development activities, collect, process, and prepare company financial information, provide information about our products and other patient and physician education and outreach efforts through our website, manage the administrative aspects of our business, and damage our reputation, any of which could adversely affect our business.

The U.S. Department of Health and Human Services Office for Civil Rights ("OCR") may impose penalties on a covered entity, such as us, for a failure to comply with a requirement of HIPAA. Penalties will vary significantly depending on factors such as the date of the violation, whether the covered entity knew or should have known of the failure to comply, or whether the covered entity's failure to comply was due to willful neglect. These penalties include civil monetary penalties of $100 to $50,000 per violation, up to an annual, per violation cap of $1,500,000. A single breach incident can result in violations of multiple standards, resulting in possible penalties potentially in excess of $1,500,000. A person who knowingly obtains or discloses individually identifiable health information in violation of HIPAA may face a criminal penalty of up to $50,000 and up to one year imprisonment. The criminal penalties increase to $100,000 and up to five years imprisonment if the wrongful conduct involves false pretenses, and to $250,000 and up to 10 years imprisonment if the wrongful conduct involves the intent to sell, transfer, or use identifiable health information for commercial advantage, personal gain, or malicious harm. The U.S. Department of Justice is responsible for criminal prosecutions under HIPAA.

HIPAA 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 in state civil suits such as those for negligence or recklessness in the misuse or breach of Protected Health Information.

In addition, HIPAA mandates that the Secretary of HHS conduct periodic compliance audits of HIPAA covered entities for compliance with the HIPAA privacy and security regulations. It also tasks HHS with establishing a methodology whereby harmed individuals who were the victims of breaches of unsecured Protected Health Information may receive a percentage of the Civil Monetary Penalty fine paid by the violator.

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 Protected Health Information is subject to an unauthorized access, use or disclosure. If a breach affects 500 patients or more, it must be reported to HHS and local media without unreasonable delay, and HHS will post the name of the breaching 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.

In addition, the interpretation and application of consumer, health-related, and data protection laws in the United States, Europe, and elsewhere are often uncertain, contradictory, and 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. In addition, these privacy regulations may differ from country to country, and may vary based on whether testing is performed in the United States or in the local country. Complying with these various 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.

Regulatory Risks Relating to Our Business

Changes in health care law, regulations and policy may have a material adverse effect on our financial condition, results of operations and cash flows.

In March 2010, U.S. President Barack Obama signed the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act (collectively, "PPACA"), which makes a number of substantial changes in the way health care is financed by both governmental and private insurers. Among other things, the PPACA:

- Requires each medical device manufacturer to pay a sales tax equal to 2.3% of the price for which such manufacturer sells its medical devices, beginning in 2013. This tax may apply to some or all of our current products and products which are in development.
- Mandates a reduction in payments for clinical laboratory services paid under the Medicare Clinical Laboratory Fee Schedule ("CLFS") of 1.75% for the years 2011 through 2015. In addition, a productivity adjustment is made to the fee schedule payment amount. These changes in payments apply to some or all of the clinical laboratory test services we furnish to Medicare beneficiaries.
- Establishes an Independent Payment Advisory Board to reduce the per capita rate of growth in Medicare spending. The Independent Payment Advisory Board has broad discretion to propose policies, which may have a negative impact on payment rates for services, including clinical laboratory services, beginning in 2016, and for hospital services beginning in 2020.

Although some of these provisions may negatively impact payment rates for clinical laboratory services, the PPACA also extends coverage to approximately 32 million previously uninsured people, which may result in an increase in the demand for our tests and services. The mandatory purchase of insurance has been strenuously opposed by a number of state governors, resulting in lawsuits challenging the constitutionality of certain provisions of the PPACA. On June 28, 2012, the Supreme Court upheld the constitutionality of the health care reform law, with the exception of certain provisions dealing with the expansion of Medicaid coverage under the law. While most of the law's provisions went into effect in 2013 and 2014, Congress has proposed a number of legislative initiatives, including possible repeal of the PPACA. On June 25, 2015, the Supreme Court affirmed the Fourth Circuit Court of Appeals in *King v. Burwell*, which allows the federal government to continue to extend tax subsidies to those individuals who purchased coverage through federal exchanges, in addition to the exchanges established by individual states.

Since its enactment, there have been judicial and Congressional challenges to certain aspects of PPACA. In January 2017, Congress voted to adopt a budget resolution for fiscal year 2017, or the Budget Resolution, that authorizes the implementation of legislation that would repeal portions of PPACA. The Budget Resolution is not a law; however, it is widely viewed as the first step toward the passage of legislation that would repeal certain aspects of PPACA. Further, on January 20, 2017, President Trump signed an Executive Order directing federal agencies with authorities and responsibilities under PPACA to waive, defer, grant exemptions from, or delay the implementation of any provision of PPACA that would impose a fiscal or regulatory burden on states, individuals, healthcare providers, health insurers, or manufacturers of pharmaceuticals or medical devices. Congress also could consider subsequent legislation to replace elements of PPACA that are repealed. Because of the continued uncertainty about the implementation of PPACA, including the potential for further legal challenges or repeal of PPACA, we cannot quantify or predict with any certainty the likely impact of the PPACA or its repeal on our business, prospects, financial condition or results of operations. Moreover, on January 30, 2017, President Trump issued an Executive Order, applicable to all executive agencies, including FDA, that requires that for each notice of proposed rulemaking or final regulation to be issued in fiscal year 2017, the agency shall identify at least two existing regulations to be repealed, unless prohibited by law. These requirements are referred to as the "two-for-one" provisions. We cannot predict what impact the "two-for-one" provisions may have on our business.

In addition, other legislative changes have been proposed and adopted since the PPACA was enacted. On August 2, 2011, President Obama signed into law the Budget Control Act of 2011, which, among other things, creates the Joint Select Committee on Deficit Reduction to recommend proposals in spending reductions to Congress. The Joint Select Committee did not achieve a targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, triggering the legislation's automatic reduction to several government programs. This includes aggregate reductions to Medicare payments to providers of 2% per fiscal year, starting in 2013. This 2% sequester was recently extended through 2024.

In addition, on February 22, 2012, President Obama signed the Middle Class Tax Relief and Job Creation Act of 2012 ("MCTRJCA"), which, among other things, mandated an additional change in Medicare reimbursement for clinical laboratory services. This legislation requires a rebasing of the Medicare CLFS to effect a 2% reduction in payment rates otherwise determined for 2013. This will serve as a base for 2014 and subsequent years. As a result of the changes mandated by PPACA and MCTRJCA, the Centers for Medicare & Medicaid Services ("CMS") projects laboratory services for 2015 will be reduced by approximately 0.25%.

Further, in 2014, Congress passed the Protecting Access to Medicare Act or PAMA which also makes significant changes in the way the Medicare will pay for laboratory services. Under PAMA and its implementing regulations, certain laboratories are required to report the amount that they are paid by third party payors for each test beginning in January 2017. CMS will use this data to calculate a weighted median for each test. That new price is supposed to effective on January 1, 2018, although any resulting reductions in excess of 10% will be phased in over time. This data reporting process will be repeated every three years for most tests, although laboratories offering Advanced Diagnostic Laboratory Tests (ADLTs) will have to report private payor data on those tests annually. It is possible that some of our tests may qualify as Advanced Diagnostic Laboratory Tests, which will require us to submit pricing annually for those tests. In addition, under PAMA, we also may be required to obtain new unique codes from CMS or any entity it designates, for our tests that do not currently have unique codes. If PAMA results in a significant reduction in the prices for our tests, it could have a significant impact on our revenues and it is not known at this time how the implementation of PAMA will affect our reimbursement.

Certain of our laboratory services are paid under the Medicare Physician Fee Schedule and, under the current statutory formula, the rates for these services are updated annually. For the past several years, the application of the statutory formula would have resulted in substantial payment reductions if Congress failed to intervene. In the past, Congress passed interim legislation to prevent the decreases. On April 16, 2015, President Obama signed the Medicare and CHIP Reauthorization Act ("MACRA"), which had previously been passed by both houses of Congress. MACRA repealed the provisions related to the Medicare Sustainable Growth Rate (SGR) formula and implements a new physician payment system that is designed to reward the quality of care. In addition, it extends the current Medicare Physician Fee Schedule rates through June 2015, and then increases them by 0.5%t for the remainder of 2015. Beginning on January 1, 2016, the rates will be increased annually by 0.5%, through 2019. For 2020 through 2025 payments will be frozen, although payment will be adjusted to account for performance on certain quality metrics under the Merit-Based Incentive Payment Systems ("MIPS") or to reflect physician participation in alternative payment models ("APMs"). For 2026 and subsequent years, qualified APM participants receive an annual 0.75% update on Medicare physician payment rates, while those not participating receive a 0.25% annual payment update, plus any applicable MIPS-based payment adjustments. At this time, it is too early to determine how these changes may impact our business beyond 2015. It is unclear what impact, if any, MACRA will have on our business and operating results, but any resulting decrease in payment may result in reduced demand for our services, which could adversely impact our revenues and results of operations.

On November 2, 2016, CMS issued its Final Physician Fee Schedule Rule for 2017, which set out policies that were effective January 2017. Among those policy changes are reductions in the payments for flow cytometry by approximately 19% and an increase in the professional component of immunohistochemistry by approximately 9%, two types of tests that we frequently perform. At this time, we are still assessing the potential impact of these changes.

In addition, many of the Current Procedure Terminology ("CPT") procedure codes that we use to bill our tests were revised by the AMA, effective January 1, 2013. In the Final Physician Fee Schedule Rule for 2013, CMS announced that it has decided to keep the new molecular codes on the CLFS, rather than move them to the Medicare Physician Fee Schedule as some stakeholders had urged. CMS also announced that for 2013 it would price the new codes using a "gapfilling" process by which it will refer the codes to the Medicare contractors to allow them to determine an appropriate price. Those prices were determined and became effective January 1, 2014. In addition, CMS also stated that it would not recognize certain of the new codes for Multi-Analyte Assays with Algorithmic Assays ("MAAAs") because it does not believe they qualify as clinical laboratory tests. However, more recently, it has determined that the individual contractors may determine whether to pay for MAAA tests on a case by case basis. On September 25, 2015, CMS released its Preliminary Determinations for new CPT codes effective in 2016, including several new MAAA CPT codes. CMS had proposed "crosswalking" these codes to an unrelated test, resulting in a significant cut in their reimbursement. However, on November 17, 2015, CMS reversed its policy and directed that the tests be gapfilled by the local contracts. It is expected that when PAMA is fully implemented, many of the MAAA codes could qualify to be reimbursed as Advanced Diagnostic Laboratory Tests ("ADLTs"), although it is unclear whether laboratories offering such tests voluntarily will apply for the ADLT designation for those tests. There can be no guarantees that Medicare and other payors will establish positive or adequate coverage policies or reimbursement rates.

We cannot predict whether future health care initiatives will be implemented at the federal or state level, or how any future legislation or regulation may affect us. The taxes imposed by the new federal legislation and the expansion of government's role in the U.S. health care industry as well as changes to the reimbursement amounts paid by payors for our products or our medical procedure volumes may reduce our profits and have a materially adverse effect on our business, financial condition, results of operations and cash flows. Moreover, Congress has proposed on several occasions to impose a 20% coinsurance on patients for clinical laboratory tests reimbursed under the CLFS, which would require us to bill patients for these amounts. Because of the relatively low reimbursement for many clinical laboratory tests, in the event that Congress were to ever enact such legislation, the cost of billing and collecting for these services would often exceed the amount actually received from the patient and effectively increase our costs of billing and collecting.

We depend on Medicare and a limited number of private payors for a significant portion of our revenues and if these or other payors stop providing reimbursement or decrease the amount of reimbursement for our tests, our revenues could decline.

For the year ended December 31, 2016, we derived approximately 20% of our total revenue from private insurance, including managed care organizations and other health care insurance providers, 14% from Medicare and 5% from other health care facilities billed directly. Medicare and other third-party payors may withdraw their coverage policies or cancel their contracts with us at any time, review and adjust the rate of reimbursement or stop paying for our tests altogether, which would reduce our total revenues.

Payors have increased their efforts to control the cost, utilization and delivery of health care services. In the past, measures have been undertaken to reduce payment rates for and decrease utilization of the clinical laboratory industry generally. Because of the cost-trimming trends, third-party payors that currently cover and provide reimbursement for our tests may suspend, revoke or discontinue coverage at any time, or may reduce the reimbursement rates payable to us. Any such action could have a negative impact on our revenues, which may have a material adverse effect on our financial condition, results of operations and cash flows.

In addition, we are currently considered a “non-contracting provider” by a number of private third-party payors because we have not entered into a specific contract to provide our specialized diagnostic services to their insured patients at specified rates of reimbursement. If we were to become a contracting provider in the future, the amount of overall reimbursement we receive is likely to decrease because we will be reimbursed less money per test performed at a contracted rate than at a non-contracted rate, which could have a negative impact on our revenues. Further, we typically are unable to collect payments from patients beyond that which is paid by their insurance and will continue to experience lost revenue as a result.

Because of certain Medicare billing rules, we may not receive reimbursement for all tests provided to Medicare patients.

Under current Medicare billing rules, claims for our tests performed on Medicare beneficiaries who were hospital inpatients when the tumor tissue samples were obtained and whose tests were ordered less than 14 days from discharge must be incorporated in the payment that the hospital receives for the inpatient services provided. Accordingly, we must bill individual hospitals for tests performed on Medicare beneficiaries during these timeframes in order to receive payment for our tests. Because we generally do not have a written agreement in place with these hospitals that purchase these tests, we may not be paid for our tests or may have to pursue payment from the hospital on a case-by-case basis. In addition, until 2012, we were permitted to bill globally for certain anatomic pathology services we furnished to certain hospitals, i.e. we billed both the technical component and the professional component to Medicare. As part of the Middle Class Tax Relief and Job Creation Act of 2012, Congress terminated the special provision for "grandfathered" hospitals as of July 1, 2012. Therefore, as of that date we were required to bill all hospitals for the technical component of all anatomic pathology services we furnish to their patients, which may be difficult and/or costly for us.

Further, the Medicare Administrative Contractors who process claims for Medicare also can impose their own rules related to coverage and payment for laboratory services provided in their jurisdiction. In 2013, Palmetto GBA, the Medicare Administrative Contractor for North Carolina, South Carolina, Virginia and West Virginia, announced a comprehensive new billing policy and a coverage policy applicable to molecular diagnostic tests, such as ours. Under coverage policy, Palmetto will deny payment for molecular diagnostic tests, unless it has issued a positive coverage determination for the test. Other Medicare contractors are also adopting policies similar to Palmetto's. If any of our tests are subject to the Palmetto policy and/or the Palmetto policy is adopted by other contractors that process claims with hospitals or laboratories that purchase and bill for our tests, our business could be adversely impacted.

Complying with numerous regulations pertaining to our business is an expensive and time-consuming process, and any failure to comply could result in substantial penalties.

We are subject to CLIA, a federal law regulating clinical laboratories that perform testing on specimens derived from humans for the purpose of providing information for the diagnosis, prevention or treatment of disease. Our clinical laboratory must be certified under CLIA in order for us to perform testing on human specimens. In addition, our proprietary tests must also be recognized as part of our accredited programs under CLIA so that we can offer them in our laboratory. CLIA is intended to ensure the quality and reliability of clinical laboratories in the United States by mandating specific standards in the areas of personnel qualifications, administration, and participation in proficiency testing, patient test management, quality control, quality assurance and inspections. We have a current certificate under CLIA to perform high complexity testing and our laboratory is accredited by CAP, one of six CLIA-approved accreditation organizations. To renew this certificate, we are

subject to survey and inspection every two years. Moreover, CLIA inspectors may make periodic inspections of our clinical reference laboratory outside of the renewal process.

The law also requires us to maintain a state laboratory license to conduct testing in that state. Our laboratory is located in New Jersey and must have a New Jersey state license; as we expand our geographic focus, we may need to obtain laboratory licenses from additional states. New Jersey laws establish standards for day-to-day operation of our clinical reference laboratory, including the training and skills required of personnel and quality control. In addition, several other states require that we hold licenses to test specimens from patients in those states. Other states may have similar requirements or may adopt similar requirements in the future. Finally, we may be subject to regulation in foreign jurisdictions as we seek to expand international distribution of our tests.

If we were to lose our CLIA certification, CAP accreditation or New Jersey laboratory license, whether as a result of a revocation, suspension or limitation, we would no longer be able to offer our tests, which would limit our revenues and harm our business. If we were to lose our license in other states where we are required to hold licenses, we would not be able to test specimens from those states.

If FDA were to begin requiring approval or clearance of our tests, we could incur substantial costs and time delays associated with meeting requirements for pre-market clearance or approval or we could experience decreased demand for, or reimbursement of, our tests.

Although FDA maintains that it has authority to regulate the development and use of LDTs, such as ours, as medical devices, it has not exercised its authority with respect to most LDTs as a matter of enforcement discretion. FDA does not generally extend its enforcement discretion to reagents or software provided by third parties and used to perform LDTs, and therefore these products must typically comply with FDA medical device regulations, which are wide-ranging and govern, among other things: product design and development, product testing, product labeling, product storage, pre-market clearance or approval, advertising and promotion and product sales and distribution.

We believe that our proprietary tests, as utilized in our laboratory testing, are LDTs. As a result, we believe that pursuant to FDA's current policies and guidance that FDA does not require that we obtain regulatory clearances or approvals for our LDTs. The container we provide for collection and transport of tumor samples from a pathology laboratory to our clinical reference laboratory may be a medical device subject to FDA's enforcement of its medical device regulations but we believe it is currently exempt from pre-market review by FDA. While we believe that we are currently in material compliance with applicable laws and regulations, we cannot assure you that FDA or other regulatory agencies would agree with our determination, and a determination that we have violated these laws, or a public announcement that we are being investigated for possible violations of these laws, could adversely affect our business, prospects, results of operations or financial condition.

Moreover, FDA guidance and policy pertaining to diagnostic testing is continuing to evolve and is subject to ongoing review and revision. A significant change in any of the laws, regulations or policies may require us to change our business model in order to maintain regulatory compliance. At various times since 2006, FDA has issued guidance documents or announced draft guidance regarding initiatives that may require varying levels of FDA oversight of our tests. For example, in June 2010, FDA announced a public meeting to discuss the agency's oversight of LDTs prompted by the increased complexity of LDTs and their increasingly important role in clinical decision-making and disease management, particularly in the context of personalized medicine. FDA indicated that it was considering a risk-based application of oversight to LDTs and that, following public input and discussion, it might issue separate draft guidance on the regulation of LDTs, which ultimately could require that we seek and obtain either pre-market clearance or approval of LDTs, depending upon the risk-based approach FDA adopts. The public meeting was held in July 2010 and further public comments were submitted to FDA through September 2010. Section 1143 of the Food and Drug Administration Safety and Innovation Act, signed by the U.S. President on July 9, 2012, required FDA to notify U.S. Congress at least 60 days prior to issuing a draft or final guidance regulating LDTs and provide details of the anticipated action.

On July 31, 2014, FDA notified Congress pursuant to the FDASIA that it intended to issue draft Guidances that would modify its policy of enforcement discretion with respect to LDTs and begin to enforce the applicable medical device regulations with respect to such products and tests. On October 3, 2014, the FDA issued two separate draft guidances: “Framework for Regulatory Oversight of Laboratory Developed Tests (LDTs)” (“The Framework Draft Guidance”) and “FDA Notification and Medical Device Reporting for Laboratory Developed Tests” (the “Notification Draft Guidance”). In the Framework Draft Guidance, FDA stated that after the Guidances are finalized, it no longer would exercise enforcement discretion with respect to most LDTs and instead would regulate them in a risk-based manner consistent with the existing classification of medical devices. The Framework Draft Guidance stated that within six months after the Guidances were finalized, all laboratories would be required to give notice to the FDA and provide basic information concerning the nature of the LDTs offered. The

FDA then would begin a phased-in review of the LDTs available, based on the risk associated with the tests. For the highest risk LDTs, which the FDA classifies as Class III devices, the Framework Draft Guidance stated that the FDA would begin to require premarket review within 12 months after the Guidance was finalized. Other high risk LDTs would be reviewed over the next four years and then lower risk tests (Class II tests) would be reviewed in the following four to nine years. The Framework Draft Guidance stated that FDA expected to issue a separate Guidance describing the criteria for its risk-based classification 18-24 months after the Guidances were finalized.

On November 18, 2016, the FDA stated that it would not be issuing final guidance on regulation of LDTs and, instead, it would outline its view of an appropriate risk-based approach to LDTs. On January 13, 2017, the FDA released a "Discussion Paper on Laboratory Developed Tests" that synthesizes the feedback that the agency received from various stakeholders on FDA regulation of LDTs "with the hope that it advances public discussion on LDT oversight." The FDA stated in the introduction to the discussion paper: "The synthesis does not represent the formal thinking of the FDA, nor is it enforceable…This document does not represent a final version of the LDT draft guidance documents that were published in 2014." Rather, its purpose is to allow for further public discussion and to give Congress a chance to develop a legislative solution. As the 115th Congress gets underway, a number of Congressional committees reportedly are working with various stakeholders to consider different approaches to regulation of LDTs. It is unclear at this time whether those committees and stakeholders can reach consensus around an approach and develop legislation and whether Congress would pass any such legislation.

If the FDA regulates LDTs as proposed, then it would classify LDTs according to the current system used to regulate medical devices. Under that system, there are three different classes of medical devices, with the requirements becoming more stringent depending on the Class.

We cannot provide any assurance that FDA regulation, including pre-market review, will not be required in the future for our tests, whether through guidance issued by FDA, new enforcement policies adopted by FDA or new legislation enacted by Congress. We believe it is possible that legislation will be enacted into law or guidance could be issued by FDA, which may result in increased regulatory burdens for us to continue to offer our tests or to develop and introduce new tests. Given the attention Congress continues to give to these issues, legislation affecting this area may be enacted into law and may result in increased regulatory burdens on us as we continue to offer our tests and to develop and introduce new tests.

In addition, the former Secretary of the Department of Health and Human Services requested that its Advisory Committee on Genetics, Health and Society make recommendations about the oversight of genetic testing. A final report was published in April 2008. If the report's recommendations for increased oversight of genetic testing were to result in further regulatory burdens, they could negatively affect our business and delay the commercialization of tests in development.

A FDA requirement that LDTs undergo premarket review could negatively affect our business until such review is completed and clearance or approval to market is obtained. FDA could require that we stop selling our tests pending pre-market clearance or approval. If FDA allows our tests to remain on the market but there is uncertainty about our tests, if they are labeled investigational by FDA or if labeling claims FDA allows us to make are very limited, orders or reimbursement may decline. The regulatory approval process may involve, among other things, successfully completing additional clinical trials and making a 510(k) submission, or filing a PMA application with FDA. If FDA requires pre-market review, our tests may not be cleared or approved on a timely basis, if at all. We may also decide voluntarily to pursue FDA pre-market review of our tests if we determine that doing so would be appropriate.

Additionally, should future regulatory actions affect any of the reagents we obtain from vendors and use in conducting our tests, our business could be adversely affected in the form of increased costs of testing or delays, limits or prohibitions on the purchase of reagents necessary to perform our testing.

If we were required to conduct additional clinical trials prior to continuing to offer our proprietary tests or any other tests that we may develop as LDTs, those trials could lead to delays or failure to obtain necessary regulatory approval, which could cause significant delays in commercializing any future products and harm our ability to achieve sustained profitability.

If the FDA decides to require that we obtain clearance or approvals to commercialize our proprietary tests, we may be required to conduct additional clinical testing prior to submitting a 510(k) premarket notification or PMA application for commercial sales. In addition, as part of our long-term strategy we plan to seek FDA clearance or approval so we can sell our proprietary tests outside our laboratory; however, we need to conduct additional clinical validation activities on our proprietary tests before we can submit an application for FDA approval or clearance. Clinical trials must be conducted in compliance with FDA regulations or FDA may take enforcement action or reject the data. The data collected from these clinical trials may ultimately be used to support market clearance or approval for our tests. Once commenced, we believe it would likely take two years or

more to conduct the studies and trials necessary to obtain clearance or approval from FDA to commercially launch any of our proprietary tests outside of our clinical laboratory. Even if our clinical trials are completed as planned, we cannot be certain that their results will support our test claims or that FDA or foreign authorities will agree with our conclusions regarding our test results. Success in early clinical trials does not ensure that later clinical trials will be successful, and we cannot be sure that the later trials will replicate the results of prior trials and studies. If we are required to conduct clinical trials, whether using prospectively acquired samples or archival samples, delays in the commencement or completion of clinical testing could significantly increase our test development costs, delay commercialization, and interrupt sales of our current products and tests. Many of the factors that may cause or lead to a delay in the commencement or completion of clinical trials may also ultimately lead to delay or denial of regulatory clearance or approval. The commencement of clinical trials may be delayed due to insufficient patient enrollment, which is a function of many factors, including the size of the patient population, the nature of the protocol, the proximity of patients to clinical sites and the eligibility criteria for the clinical trial. Moreover, the clinical trial process may fail to demonstrate that our tests are effective for the proposed indicated uses, which could cause us to abandon a test candidate and may delay development of other tests.

We may find it necessary to engage contract research organizations to perform data collection and analysis and other aspects of our clinical trials, which might increase the cost and complexity of our trials. We may also depend on clinical investigators, medical institutions and contract research organizations to perform the trials properly. If these parties do not successfully carry out their contractual duties or obligations or meet expected deadlines, or if the quality, completeness or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols or for other reasons, our clinical trials may have to be extended, delayed or terminated. Many of these factors would be beyond our control. We may not be able to enter into replacement arrangements without undue delays or considerable expenditures. If there are delays in testing or approvals as a result of the failure to perform by third parties, our research and development costs would increase, and we may not be able to obtain regulatory clearance or approval for our tests. In addition, we may not be able to establish or maintain relationships with these parties on favorable terms, if at all. Each of these outcomes would harm our ability to market our tests or to achieve sustained profitability.

We are subject to federal and state health care fraud and abuse laws and regulations and could face substantial penalties if we are unable to fully comply with such laws.

We are subject to health care fraud and abuse regulation and enforcement by both the federal government and the states in which we conduct our business. These health care laws and regulations include, for example:

- the federal Anti-kickback Statute, which prohibits, among other things, persons or entities from soliciting, receiving, offering or providing remuneration, directly or indirectly, in return for or to induce either the referral of an individual for, or the purchase order or recommendation of, any item or services for which payment may be made under a federal health care program such as the Medicare and Medicaid programs;
- the federal physician self-referral prohibition, commonly known as the Stark Law, which prohibits physicians from referring Medicare or Medicaid patients to providers of "designated health services" with whom the physician or a member of the physician's immediate family has an ownership interest or compensation arrangement, unless a statutory or regulatory exception applies;
- HIPAA, which established federal crimes for knowingly and willfully executing a scheme to defraud any health care benefit program or making false statements in connection with the delivery of or payment for health care benefits, items or services;
- the federal civil monetary penalties law, which prohibits, among other things, offering or transferring remuneration, including waivers of co-payments and deductible amounts (or any part thereof), to a federal healthcare beneficiary that a person knows or should know is likely to influence the beneficiary's decision to order or receive items or services reimbursable by the government from a particular provider or supplier;
- federal false claims laws, which, prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other third-party payors that are false or fraudulent; and
- state law equivalents of each of the above federal laws, such as anti-kickback and false claims laws, which may apply to items or services reimbursed by any third-party payor, including commercial insurers.

Further, the PPACA, among other things, amends the intent requirement of the federal anti-kickback and criminal health care fraud statutes. A person or entity no longer needs to have actual knowledge of this statute or specific intent to violate it. 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 false claims statutes.

The PPACA, among other things, also imposed new reporting requirements on manufacturers of certain devices, drugs and biologics for certain payments and transfers of value by them and in some cases their distributors to physicians and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members. Failure to submit required information timely, completely and accurately for all payments, transfers of value and ownership or investment interests may result in civil monetary penalties of up to an aggregate of $150,000 per year (or up to an aggregate of $1.0 million per year for “knowing failures”). Manufacturers must submit reports by the 90th day of each calendar year. Any failure to comply with these reporting requirements could result in significant fines and penalties. Because we manufacture our own LDTs solely for use by or within our own laboratory, we believe that we are exempt from these reporting requirements. We cannot assure you, however, that the 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, prospects, results of operations or financial condition.

We have adopted policies and procedures designed to comply with these laws, including policies and procedures relating to financial arrangements between us and physicians who refer patients to us. In the ordinary course of our business, we conduct internal reviews of our compliance with these laws. Our compliance is also subject to governmental review. The government alleged that we engaged in improper billing practices in the past and we may be the subject of such allegations in the future as the growth of our business and sales organization may increase the potential of violating these laws or our internal policies and procedures. The risk of our being found in violation of these laws and regulations is further increased by the fact that many of them have not been fully interpreted by the regulatory authorities or the courts, and their provisions are open to a variety of interpretations.

Any action brought against us for violation of these laws or regulations, even if we successfully defend against it, could cause us to incur significant legal expenses and divert our management's attention from the operation of our business. If our operations are found to be in violation of any of these laws and regulations, we may be subject to any applicable penalty associated with the violation, including civil and criminal penalties, damages and fines, and/or exclusion from participation in Medicare, Medi-Cal or other state or federal health care programs, we could be required to refund payments received by us, and we could be required to curtail or cease our operations. Any of the foregoing consequences could seriously harm our business and our financial results.

We are required to comply with laws governing the transmission, security and privacy of health information that require significant compliance costs, and any failure to comply with these laws could result in material criminal and civil penalties.

Under the administrative simplification provisions of HIPAA, the U.S. Department of Health and Human Services has issued regulations which establish uniform standards governing the conduct of certain electronic health care transactions and protecting the privacy and security of Protected Health Information used or disclosed by health care providers and other covered entities. Three principal regulations with which we are currently required to comply have been issued in final form under HIPAA: privacy regulations, security regulations and standards for electronic transactions.

The privacy regulations cover the use and disclosure of Protected Health Information by health care providers. It also sets forth certain rights that an individual has with respect to his or her Protected Health Information maintained by a health care provider, including the right to access or amend certain records containing Protected Health Information or to request restrictions on the use or disclosure of Protected Health Information. We have implemented policies, procedures and standards in an effort to comply appropriately with the final HIPAA security regulations, which establish requirements for safeguarding the confidentiality, integrity and availability of Protected Health Information, which is electronically transmitted or electronically stored. The HIPAA privacy and security regulations establish a uniform federal "floor" and do not supersede state laws that are more stringent or provide individuals with greater rights with respect to the privacy or security of, and access to, their records containing Protected Health Information. As a result, we are required to comply with both HIPAA privacy regulations and varying state privacy and security laws. Moreover, HITECH, among other things, established certain health information security breach notification requirements. Under HIPAA, a covered entity must notify any individual "without unreasonable delay and in no case later than 60 calendar days after discovery of the breach" if their unsecured Protected Health Information is subject to an unauthorized access, use or disclosure. If a breach affects 500 patients or more, it must be reported to HHS and local media without unreasonable delay, and HHS will post the name of the breaching 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.

These laws contain significant fines and other penalties for wrongful use or disclosure of Protected Health Information. We have implemented practices and procedures to meet the requirements of the HIPAA privacy regulations and state privacy laws. In addition, we are in the process of taking necessary steps to comply with HIPAA's standards for electronic transactions, which establish standards for common health care transactions. Given the complexity of the HIPAA, HITECH and state privacy restrictions, the possibility that the regulations may change, and the fact that the regulations are subject to changing and

potentially conflicting interpretation, our ability to comply with the HIPAA, HITECH and state privacy requirements is uncertain and the costs of compliance are significant. To the extent that we submit electronic health care 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. Additionally, the costs of complying with any changes to the HIPAA, HITECH and state privacy restrictions may have a negative impact on our operations. We could be subject to criminal penalties and civil sanctions for failing to comply with the HIPAA, HITECH and state privacy restrictions, which could result in the incurrence of significant monetary penalties. For further discussion of HIPAA and the impact on our business, see the section entitled "*Risk Factors-Risks Related to Our Business and Strategy-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 fines, penalties, liability, and adverse effects to our business and our reputation."*

Intellectual Property Risks Related to Our Business

Our rights to use technologies licensed from third parties are not within our control, and we may not be able to sell our products if we lose our existing rights or cannot obtain new rights on reasonable terms.

Our ability to market certain of our tests and services, domestically and/or internationally, is in part derived from licenses to intellectual property which is owned by third parties. As such, we may not be able to continue selling our tests and services if we lose our existing licensed rights or sell new tests and services if we cannot obtain such licensed rights on reasonable terms. In particular, we currently in-license a biomarker from the National Cancer Institute used in our FHACT probe. Further, we may also need to license other technologies to commercialize future products. As may be expected, our business may suffer if (i) these licenses terminate; (ii) if the licensors fail to abide by the terms of the license, properly maintain the licensed intellectual property or fail to prevent infringement of such intellectual property by third parties; (iii) if the licensed patents or other intellectual property rights are found to be invalid or (iv) if we are unable to enter into necessary licenses on reasonable terms or at all. In return for the use of a third-party's technology, we may agree to pay the licensor royalties based on sales of our products as well as other fees. Such royalties and fees are a component of cost of product revenues and will impact the margins on our tests.

Our collaborators may assert ownership or commercial rights to inventions we develop from our use of the biological materials they provide to us.

We rely on certain collaborators to provide us with tissue samples and biological materials that we use to develop our tests. In some cases we have written agreements with collaborators that may require us to negotiate ownership and commercial rights with the collaborator if our use of such collaborator's materials results in an invention. Other agreements may limit our use of those materials to research/not for profit use. In other cases, we may not have written agreements, or the written agreements we have may not clearly deal with intellectual property rights. If we cannot successfully negotiate sufficient ownership and commercial rights to the inventions that result from our use of a collaborator's materials where required, or if disputes otherwise arise with respect to the intellectual property developed with the use of a collaborator's samples, we may be limited in our ability to capitalize on the market potential of these inventions.

The U.S. government may have "march-in rights" to certain of our probe related intellectual property.

Because federal grant monies were used in support of the research and development activities that resulted in our two issued U.S. patents, the federal government retains what are referred to as "march-in rights" to these patents. In particular, the National Cancer Institute and the National Institutes of Health, each of which administered grant monies to us, technically retain the right to require us, under certain specific circumstances, to grant the U.S. government either a nonexclusive, partially exclusive, or exclusive license to the patented invention in any field of use, upon terms that are reasonable for a particular situation. Circumstances that trigger march-in rights include, for example, failure to take, within a reasonable time, effective steps to achieve practical application of the invention in a field of use, failure to satisfy the health and safety needs of the public, and failure to meet requirements of public use specified by federal regulations. The National Cancer Institute and the National Institutes of Health can elect to exercise these march-in rights on their own initiative or at the request of a third-party.

If we are unable to maintain intellectual property protection, our competitive position could be harmed.

Our ability to protect our proprietary discoveries and technologies affects our ability to compete and to achieve sustained profitability. Currently, we rely on a combination of U.S. and foreign patents and patent applications, copyrights, trademarks and trademark applications, confidentiality or non-disclosure agreements, material transfer agreements, licenses, work-for-hire agreements and invention assignment agreements to protect our intellectual property rights. We also maintain as trade secrets certain company know-how and technological innovations designed to provide us with a competitive advantage in the

marketplace. Currently, including both U.S. and foreign patent applications, we have only two issued U.S. patents and twelve pending patent applications relating to various aspects of our technology. While we intend to pursue additional patent applications, it is possible that our pending patent applications and any future applications may not result in issued patents. Even if patents are issued, third parties may independently develop similar or competing technology that avoids our patents. Further, we cannot be certain that the steps we have taken will prevent the misappropriation of our trade secrets and other confidential information and technology, particularly in foreign countries where we do not have intellectual property rights.

From time to time the U.S. Supreme Court, other federal courts, the U.S. Congress or the U.S. Patent and Trademark Office ("USPTO") may change the standards of patentability. Any such changes could have a negative impact on our business. For instance, on October 30, 2008, the Court of Appeals for the Federal Circuit issued a decision that methods or processes cannot be patented unless they are tied to a machine or involve a physical transformation. The U.S. Supreme Court later reversed that decision in *Bilski v. Kappos*, finding that the "machine-or-transformation" test is not the only test for determining patent eligibility. The Court, however, declined to specify how and when processes are patentable. Most recently, on March 20, 2012, in the case *Mayo v. Prometheus*, the U.S. Supreme Court reversed the Federal Circuit's application of *Bilski* and invalidated a patent focused on a diagnostic process because the patent claim embodied a law of nature. On July 3, 2012, the USPTO issued its Interim Guidelines for Subject Matter Eligibility Analysis of Process Claims Involving Laws of Nature in view of the *Prometheus* decision. It remains to be seen how these guidelines play out in the actual prosecution of diagnostic claims. Similarly, it remains to be seen lower courts will interpret the *Prometheus* decision. Some aspects of our technology involve processes that may be subject to this evolving standard, and we cannot guarantee that any of our pending process claims will be patentable as a result of such evolving standards.

The U.S. Supreme Court's June 14, 2013 decision in *Association for Molecular Pathology v. Myriad* will likely have an impact on the entire biotechnology industry. Specifically, the case involved certain of Myriad Genetics, Inc.'s U.S. patents related to the breast cancer susceptibility genes BRCA1 and BRCA2. Plaintiffs asserted that the breast cancer genes were not patentable subject matter. The Supreme Court unanimously held that the isolated form of naturally occurring DNA molecules does not rise to the level of patent-eligible subject matter. But the Court also held that claims directed to complementary DNA (cDNA) molecules were patent-eligible because cDNA is not naturally occurring. The Supreme Court focused on the informational content of the isolated DNA and determined that the information contained in the isolated DNA molecule was not markedly different from that naturally found in the human chromosome. Yet, in holding isolated cDNA molecules patent-eligible, the Court recognized the differences between human chromosomal DNA and the corresponding cDNA. Because the non-coding regions of naturally occurring chromosomal DNA have been removed in cDNA, the Court accepted that cDNA is not a product of nature and, therefore, is patent-eligible subject matter.

It does not appear that the Supreme Court's ruling in *Myriad* will adversely affect our current patent portfolio which, unlike the claims at issue in *Myriad*, centers on algorithmic methods associating chromosomal markers to specific clinical end-points. Nevertheless, we of course need to remain mindful that this is an evolving area of law.

In addition, on February 5, 2010, the Secretary's Advisory Committee on Genetics, Health and Society voted to approve a report entitled "Gene Patents and Licensing Practices and Their Impact on Patient Access to Genetic Tests." That report defines "patent claims on genes" broadly to include claims to isolated nucleic acid molecules as well as methods of detecting particular sequences or mutations. The report also contains six recommendations, including the creation of an exemption from liability for infringement of patent claims on genes for anyone making, using, ordering, offering for sale or selling a test developed under the patent for patient care purposes, or for anyone using the patent-protected genes in the pursuit of research. The report also recommended that the Secretary should explore, identify and implement mechanisms that will encourage more voluntary adherence to current guidelines that promote nonexclusive in-licensing of diagnostic genetic and genomic technologies. It is unclear whether the U.S. Department of Health and Human Services will act upon these recommendations, or if the recommendations would result in a change in law or process that could negatively impact our patent portfolio or future research and development efforts.

We may become involved in lawsuits or other proceedings to protect or enforce our patents or other intellectual property rights, which could be time-consuming and costly to defend, and could result in our loss of significant rights and the assessment of treble damages.

From time to time we may face intellectual property infringement (or misappropriation) claims from third parties. Some of these claims may lead to litigation. The outcome of any such litigation can never be guaranteed, and an adverse outcome could affect us negatively. For example, were a third-party to succeed on an infringement claim against us, we may be required to pay substantial damages (including up to treble damages if such infringement were found to be willful). In addition, we could face an injunction, barring us from conducting the allegedly infringing activity. The outcome of the litigation could require us to enter into a license agreement which may not be pursuant to acceptable or commercially reasonable or practical terms or which

may not be available at all. It is also possible that an adverse finding of infringement against us may require us to dedicate substantial resources and time in developing non-infringing alternatives, which may or may not be possible. In the case of diagnostic tests, we would also need to include non-infringing technologies which would require us to re-validate our tests. Any such re-validation, in addition to being costly and time consuming, may be unsuccessful.

Furthermore, we may initiate claims to assert or defend our own intellectual property against third parties. Any intellectual property litigation, irrespective of whether we are the plaintiff or the defendant, and regardless of the outcome, is expensive and time-consuming, and could divert our management's attention from our business and negatively affect our operating results or financial condition. We may not be able to prevent, alone or with our collaborators, misappropriation of our proprietary rights, particularly in countries where the laws may not protect those rights as fully as in the United States. In addition, interference proceedings brought by the USPTO may be necessary to determine the priority of inventions with respect to our patents and patent applications or those of our current or future collaborators.

Finally, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential and proprietary information could be compromised by disclosure during this type of litigation. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on our financial condition.

We may not be able to protect our intellectual property rights throughout the world.

Filing, prosecuting and defending patents on our technologies in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can be less extensive than those in the United States. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. For example, many foreign countries have compulsory licensing laws under which a patent owner must grant licenses to third parties. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and further, may export otherwise infringing products to territories where we have patent protection, but enforcement rights are not as strong as those in the United States. These products may compete with our technologies in jurisdictions where we do not have any issued patents and our patent claims or other intellectual rights may not be effective or sufficient to prevent them from so competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries do not favor the enforcement of patents and other intellectual property protection, which could make it difficult for us to stop the infringement of our patents generally. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

Risks Relating to our International Operations

International expansion of our business exposes us to business, regulatory, political, operational, financial and economic risks associated with doing business outside of the United States.

Our business strategy incorporates international expansion, including our recent acquisitions which have provided us with facilities in India and China, and the possibility of establishing and maintaining clinician marketing and education capabilities in other locations outside of the United States and expanding our relationships with distributors and manufacturers. Doing business internationally involves a number of risks, including:

- multiple, conflicting and changing laws and regulations such as tax and transfer pricing laws, export and import restrictions, employment laws, regulatory requirements and other governmental approvals, permits and licenses;
- failure by us or our distributors to obtain regulatory approvals for the sale or use of our tests in various countries, including failure to achieve "CE Marking", a conformity mark which is required to market in vitro diagnostic medical devices in the European Economic Area and which is broadly accepted in other international markets;
- difficulties in managing foreign operations;
- complexities associated with managing multiple payor-reimbursement regimes or self-pay systems;

- logistics and regulations associated with shipping tissue samples, including infrastructure conditions and transportation delays;
- limits on our ability to penetrate international markets if our diagnostic tests cannot be processed by an appropriately qualified local laboratory;
- financial risks, such as longer payment cycles, difficulty enforcing contracts and collecting accounts receivable and exposure to foreign currency exchange rate fluctuations;
- reduced protection for intellectual property rights;
- natural disasters, political and economic instability, including wars, terrorism and political unrest, outbreak of disease, boycotts, curtailment of trade and other business restrictions; and
- failure to comply with the Foreign Corrupt Practices Act, including its books and records provisions and its anti-bribery provisions, by maintaining accurate information and control over sales and distributors' activities.

Any of these risks, if encountered, could significantly harm our future international expansion and operations and, consequently, have a material adverse effect on our financial condition, results of operations and cash flows.

Our operations are subject to risks associated with emerging markets, including China and India.

Emerging markets are a significant focus of our growth strategy. The developing nature of these markets presents several risks, including deterioration of social, political, labor, or economic conditions in a country or region, and difficulties in staffing and managing foreign operations. Perceived risks associated with investing in emerging markets such as China and India, or a general disruption in the development of such markets could materially and adversely affect our business, operating results and financial condition.

A portion of our assets and operations are located in China and we are subject to regulatory, economic, political and other uncertainties in China.

The Chinese government has the ability to exercise significant influence and control over our operations in China. In recent years, the Chinese government has implemented measures for economic reform, the reduction of state ownership of productive assets and the establishment of corporate governance practices in business enterprises. However, many productive assets in China are still owned by the Chinese government. In addition, the government continues to play a significant role in regulating industrial development by imposing business regulations. It also exercises significant control over the country's economic growth through the allocation of resources, controlling payment of foreign currency-denominated obligations, setting monetary policy and providing preferential treatment to particular industries or companies.

There can be no assurance that China's economic, political or legal systems will not develop in a way that becomes detrimental to our business, results of operations and financial condition. Our activities may be materially and adversely affected by changes in China's economic and social conditions and by changes in the policies of the government, such as measures to control inflation, changes in the rates or method of taxation and the imposition of additional restrictions on currency conversion.

Additional factors that we may experience in connection with having operations in China or other foreign countries that may adversely affect our business and results of operations include:

- our inability to enforce or obtain a remedy under any material agreements;
- Chinese restrictions on foreign investment that could impair our ability to conduct our business or acquire or contract with other entities in the future;
- restrictions on currency exchange that may limit our ability to use cash flow most effectively or to repatriate our investment;
- fluctuations in currency values;
- cultural, language and managerial differences that may reduce our overall performance; and
- political instability.

A portion of our assets and operations are located in India and we are subject to regulatory, economic, political and other uncertainties in India.

Our Indian subsidiary serves both the research and clinical markets and is based in Hyderabad, India. In the past, the Indian economy has experienced many of the problems that commonly confront the economies of developing countries, including high inflation, erratic gross domestic product growth and shortages of foreign exchange. The Indian government has exercised, and continues to exercise, significant influence over many aspects of the Indian economy through the allocation of resources, controlling payment of foreign currency-denominated obligations, setting monetary policy and providing preferential treatment

to particular industries, and Indian government actions concerning the economy could have a material adverse effect on private sector entities like us.

India has experienced significant economic growth over the last several years, but faces major challenges in sustaining that growth in the years ahead. These challenges include the need for substantial infrastructure development. India has also recently experienced civil unrest and terrorism and has been involved in conflicts with neighboring countries. In recent years, there have been military confrontations between India and Pakistan that have occurred in the region of Kashmir and along the India-Pakistan border. If India becomes engaged in armed hostilities, particularly if these hostilities are protracted or involve the threat of or use of weapons of mass destruction, it is likely that our operations would be materially adversely affected.

Our financial performance may be adversely affected by general economic conditions and economic and fiscal policy in India, including changes in exchange rates and controls, interest rates and taxation policies, as well as social stability and political, economic or diplomatic developments affecting India in the future.

Our operating results may be adversely affected by fluctuations in foreign currency exchange rates and restrictions on the deployment of cash across our global operations.

Although we report our operating results in U.S. dollars, a portion of our revenues and expenses are or will be denominated in currencies other than the U.S. dollar. Fluctuations in foreign currency exchange rates can have a number of adverse effects on us. Because our consolidated financial statements are presented in U.S. dollars, we must translate revenues, expenses and income, as well as assets and liabilities, into U.S. dollars at exchange rates in effect during or at the end of each reporting period. Therefore, changes in the value of the U.S. dollar against other currencies will affect our revenues, income from operations, other income (expense), net and the value of balance sheet items originally denominated in other currencies. There is no guarantee that our financial results will not be adversely affected by currency exchange rate fluctuations. In addition, in some countries we could be subject to strict restrictions on the movement of cash and the exchange of foreign currencies, which could limit our ability to use these funds across our global operations.

We could be adversely affected by violations of the U.S. Foreign Corrupt Practices Act and other worldwide anti-bribery laws.

The FCPA and anti-bribery laws in other jurisdictions generally prohibit companies and their intermediaries from making improper payments for the purpose of obtaining or retaining business or other commercial advantage. Our policies mandate compliance with these anti-bribery laws, which often carry substantial penalties, including criminal and civil fines, potential loss of export licenses, possible suspension of the ability to do business with the federal government, denial of government reimbursement for products and exclusion from participation in government health care programs. We operate in jurisdictions such as India and China that have experienced governmental and private sector corruption to some degree, and, in certain circumstances, strict compliance with anti-bribery laws may conflict with certain local customs and practices. We cannot assure that our internal control policies and procedures always will protect us from reckless or other inappropriate acts committed by our affiliates, employees or agents. Violations of these laws, or allegations of such violations, could have a material adverse effect on our business, financial position and results of operations.

Risks Relating to Our Common Stock

The price of our common stock has been and could remain volatile, and the market price of our common stock may decrease.

The market price of our common stock has historically experienced and may continue to experience significant volatility. From January 2014 through December 31, 2016, the market price of our common stock has fluctuated from a high of $20.00 per share in the first quarter of 2014, to a low of $1.10 per share in the fourth quarter of 2016. Market prices for securities of development-stage life sciences companies have historically been particularly volatile. The factors that may cause the market price of our common stock to fluctuate include, but are not limited to:

- progress, or lack of progress, in developing and commercializing our proprietary tests;
- favorable or unfavorable decisions about our tests or services from government regulators, insurance companies or other third-party payors;
- our ability to recruit and retain qualified regulatory and research and development personnel;
- changes in investors' and securities analysts' perception of the business risks and conditions of our business;
- changes in our relationship with key collaborators;
- changes in the market valuation or earnings of our competitors or companies viewed as similar to us;

- changes in key personnel;
- depth of the trading market in our common stock;
- changes in our capital structure, such as future issuances of securities or the incurrence of additional debt;
- the granting or exercise of employee stock options or other equity awards;
- realization of any of the risks described under this section titled “Risk Factors”; and
- general market and economic conditions.

In addition, the equity markets have experienced significant price and volume fluctuations that have affected the market prices for the securities of newly public companies for a number of reasons, including reasons that may be unrelated to our business or operating performance. These broad market fluctuations may result in a material decline in the market price of our common stock and you may not be able to sell your shares at prices you deem acceptable. In the past, following periods of volatility in the equity markets, securities class action lawsuits have been instituted against public companies. Such litigation, if instituted against us, could result in substantial cost and the diversion of management attention.

Our stockholders may be diluted by exercises of outstanding options and warrants.

As of March 22, 2017 we had outstanding options to purchase an aggregate of 2,532,734 shares of our common stock at a weighted average exercise price of $7.85 per share and warrants to purchase an aggregate of 7,475,961 shares of our common stock at a weighted average exercise price of $4.61 per share. The exercise of such outstanding options and warrants will result in dilution of the value of our shares.

Reports published by securities or industry analysts, including projections in those reports that exceed our actual results, could adversely affect our common stock price and trading volume.

Securities research analysts establish and publish their own periodic projections for our business. These projections may vary widely from one another and may not accurately predict the results we actually achieve. Our stock price may decline if our actual results do not match securities research analysts' projections. Similarly, if one or more of the analysts who writes reports on us downgrades our stock or publishes inaccurate or unfavorable research about our business, our stock price could decline. If one or more of these analysts ceases coverage of our company or fails to publish reports on us regularly, our stock price or trading volume could decline. While we expect securities research analyst coverage, if no securities or industry analysts begin to cover us, the trading price for our stock and the trading volume could be adversely affected.

Our directors and executive officers have substantial influence over us and could delay or prevent a change in corporate control.

Our directors and executive officers, together with their affiliates, in the aggregate beneficially own approximately 22.3% of our outstanding common stock, based on the number of shares outstanding on December 31, 2016. These stockholders, acting together, have significant influence over the outcome of matters submitted to our stockholders for approval, including the election of directors and any merger, consolidation or sale of all or substantially all of our assets. In addition, these stockholders, acting together, have significant influence over our management and affairs. Accordingly, this concentration of ownership might harm the market price of our common stock by:

- delaying, deferring or preventing a change in control;
- impeding a merger, consolidation, takeover or other business combination involving us; or
- discouraging a potential acquirer from making a tender offer or otherwise attempting to obtain control of us.

We are an “emerging growth company,” and any decision on our part to comply only with certain reduced disclosure requirements applicable to “emerging growth companies” could make our common stock less attractive to investors.

We are an “emerging growth company,” as defined in the JOBS Act, and, for as long as we continue to be an “emerging growth company,” we intend to take advantage of exemptions from various reporting requirements applicable to other public companies but not to “emerging growth companies,” including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as discussed below, 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 shareholder approval of any golden parachute payments not previously approved. We will remain an emerging growth company until the earliest of (i) the last day of the fiscal year in which we have total annual gross revenue of $1.0 billion or more; (ii) December 31, 2018, which is the last day of our fiscal year following the fifth anniversary of the date of the completion of our initial public offering; (iii) the date on which we have issued more than $1.0 billion in nonconvertible debt during the previous three years; and (iv) the date on which

we are deemed to be a large accelerated filer under the rules of the SEC. We have irrevocably chosen to "opt out" of the extended transition periods available under the JOBS Act for complying with new or revised accounting standards. We intend to take advantage of certain exemptions from various reporting requirements 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 shareholder approval of any golden parachute payments not previously approved, and if we do take advantage of these exemptions, we cannot predict if investors will find our common stock less attractive as a result. If some investors find our common stock less attractive as a result of any choices to take advantage of these reduced disclosure obligations, there may be a less active trading market for our common stock and our stock price may be more volatile.

We are incurring significantly increased costs and devote substantial management time as a result of operating as a public company particularly after we are no longer an "emerging growth company."

As a public company and particularly after we cease to be an "emerging growth company," we are incurring significant legal, accounting and other expenses that we did not incur as a private company and which may increase after we are no longer an "emerging growth company." For example, in addition to being required to comply with certain requirements of the Sarbanes-Oxley Act of 2002, we will be required to comply with certain requirements of the Dodd Frank Wall Street Reform and Consumer Protection Act, as well as rules and regulations subsequently implemented by the SEC, 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. 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.

The Sarbanes-Oxley Act requires, among other things, that we maintain effective internal control over financial reporting and disclosure controls and procedures. In particular, we must perform system and process evaluation and testing of our internal control over financial reporting to allow management to report on the effectiveness of our internal control over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act. In addition, after we are no longer an "emerging growth company," provided that we are not then still a "smaller reporting company," we will be required to have our independent registered public accounting firm attest to the effectiveness of our internal control over financial reporting. Our compliance with Section 404 of the Sarbanes-Oxley Act, as applicable, requires us to incur substantial accounting expense and expend significant management efforts. We currently do not have an internal audit group, and we will need to continue to hire additional accounting and financial staff with appropriate public company experience and technical accounting knowledge. If we or our independent registered public accounting firm identify deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, the market price of our stock could decline and we could be subject to sanctions or investigations by the NASDAQ, the SEC or other regulatory authorities, which would require additional financial and management resources.

Our ability to successfully implement our business plan and maintain compliance with Section 404, as applicable, requires us to be able to prepare timely and accurate financial statements. We expect that we will need to continue to improve existing, and implement new operational and financial systems, procedures and controls to manage our business effectively. Any delay in the implementation of, or disruption in the transition to, new or enhanced systems, procedures or controls, may cause our operations to suffer and we may be unable to conclude that our internal control over financial reporting is effective and to obtain an unqualified report on internal controls from our auditors as required under Section 404 of the Sarbanes-Oxley Act. If we fail to maintain an effective system of internal control over financial reporting, we may not be able to accurately report our financial results, and current and potential stockholders may lose confidence in our financial reporting. This, in turn, could have an adverse impact on trading prices for our common stock, and could adversely affect our ability to access the capital markets.

Anti-takeover provisions of our certificate of incorporation, our bylaws and Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove the current members of our board and management.

Certain provisions of our amended and restated certificate of incorporation and bylaws could discourage, delay or prevent a merger, acquisition or other change of control that stockholders may consider favorable, including transactions in which you might otherwise receive a premium for your shares. Furthermore, these provisions could prevent or frustrate attempts by our stockholders to replace or remove members of our board of directors. These provisions also could limit the price that investors might be willing to pay in the future for our common stock, thereby depressing the market price of our common stock. Stockholders who wish to participate in these transactions may not have the opportunity to do so. These provisions, among other things:

- allow the authorized number of directors to be changed only by resolution of our board of directors;
- authorize our board of directors to issue, without stockholder approval, preferred stock, the rights of which will be determined at the discretion of the board of directors and that, if issued, could operate as a "poison pill" to dilute the stock ownership of a potential hostile acquirer to prevent an acquisition that our board of directors does not approve;
- establish advance notice requirements for stockholder nominations to our board of directors or for stockholder proposals that can be acted on at stockholder meetings; and
- limit who may call a stockholder meeting.

In addition, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, or DGCL, which may, unless certain criteria are met, prohibit large stockholders, in particular those owning 15% or more of the voting rights on our common stock, from merging or combining with us for a prescribed period of time.

Because we do not expect to pay cash dividends for the foreseeable future, you must rely on appreciation of our common stock price for any return on your investment. Even if we change that policy, we may be restricted from paying dividends on our common stock.

We do not intend to pay cash dividends on shares of our common stock for the foreseeable future. Any determination to pay dividends in the future will be at the discretion of our board of directors and will depend upon results of operations, financial performance, contractual restrictions, restrictions imposed by applicable law and other factors our board of directors deems relevant. Accordingly, you will have to rely on capital appreciation, if any, to earn a return on your investment in our common stock. Investors seeking cash dividends in the foreseeable future should not purchase our common stock.

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

Our ability to utilize our federal net operating loss, carryforwards and federal tax credits are limited under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended. The limitations apply since we have experienced an “ownership change,” as defined by Section 382, as a result of the Company's securities offerings. Generally, an ownership change occurs if the percentage of the value of the stock that is owned by one or more direct or indirect “five percent shareholders” changes by more than 50 percentage points over their lowest ownership percentage at any time during the applicable testing period (typically three years). Since we have experienced an “ownership change”, our NOL carryforwards and federal tax credits are subject to limitations as to our ability to utilize them to offset taxable income and related income taxes. In addition, future changes in our stock ownership, which may be outside of our control, may trigger further “ownership changes” which would further limit their utilization. As a result, if we earn net taxable income, our ability to use our pre-change net operating loss carryforwards and other tax attributes to offset United States federal taxable income and related income taxes are subject to limitations, which could potentially result in increased future tax liability to us.

Our failure to meet the continued listing requirements of The NASDAQ Capital Market could result in a de-listing of our common stock.

If we fail to satisfy the continued listing requirements of The NASDAQ Capital Market, such as the corporate governance requirements or the minimum closing bid price requirement, NASDAQ may take steps to de-list our common stock. Such a de-listing would likely have a negative effect on the price of our common stock and would impair your ability to sell or purchase our common stock when you wish to do so. In the event of a de-listing, we would take actions to restore our compliance with NASDAQ's listing requirements, but we can provide no assurance that any such action taken by us would allow our common stock to become listed again, stabilize the market price or improve the liquidity of our common stock, prevent our common stock from dropping below the NASDAQ minimum bid price requirement or prevent future non-compliance with NASDAQ listing requirements.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

As of December 31, 2016, we had a lease for approximately 17,900 square feet of office and laboratory space in Rutherford, New Jersey, 24,900 square feet of laboratory space located in Research Triangle Park (RTP) in Morrisville, North Carolina,

10,000 square feet of laboratory space in Hyderabad, India, 2,700 square feet of laboratory space in Shanghai, China and approximately 19,100 square feet of laboratory space in Los Angeles, California. We have escalating lease agreements for both our New Jersey and North Carolina spaces which expire February 2018 and May 2020, respectively. We also have a lease agreement for our California space which expires on December 31, 2017.

Item 3. Legal Proceedings

In the normal course of business, the Company may be involved in legal proceedings or threatened legal proceedings. We are not party to any legal proceedings or aware of any threatened legal proceedings which are expected to have a material adverse effect on our financial condition, results of operations or liquidity.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

The following table sets forth, for the periods indicated, the reported high and low sales prices of our common stock on The NASDAQ Capital Market.

	High	Low
4th Quarter 2016	$ 1.98	$ 1.10
3rd Quarter 2016	$ 2.73	$ 1.72
2nd Quarter 2016	$ 2.93	$ 1.82
1st Quarter 2016	$ 3.38	$ 1.90
4th Quarter 2015	$ 8.51	$ 2.75
3rd Quarter 2015	$ 12.75	$ 7.57
2nd Quarter 2015	$ 12.22	$ 7.57
1st Quarter 2015	$ 9.76	$ 6.55

Holders

As of December 31, 2016, we had approximately 95 holders of record of our common stock. The number of record holders was determined from the records of our transfer agent and does not include beneficial owners of common stock whose shares are held in the names of various security brokers, dealers, and registered clearing agencies. The transfer agent of our common stock is Continental Stock Transfer & Trust, 17 Battery Place, 8th Floor, New York, New York, 10004.

Dividends

We have never declared dividends on our equity securities, and currently do not plan to declare dividends on shares of our common stock in the foreseeable future. We expect to retain our future earnings, if any, for use in the operation and expansion of our business. Our loan agreements prohibit us from paying cash dividends on our common stock and the terms of any future loan agreement we enter into or any debt securities we may issue are likely to contain similar restrictions on the payment of dividends. Subject to the foregoing, the payment of cash dividends in the future, if any, will be at the discretion of our board of directors and will depend upon such factors as earnings levels, capital requirements, our overall financial condition and any other factors deemed relevant by our board of directors.

Equity Compensation Plan Information

The following table provides information as of December 31, 2016 regarding shares of our common stock that may be issued under our existing equity compensation plans, including our 2008 Stock Option Plan (the "2008 Plan") and our 2011 Equity Incentive Plan (the "2011 Plan") as well as shares issued outside of these plans.

	Equity Compensation Plan Information			
Plan Category	(a) Number of securities to be issued upon exercise of outstanding options and rights(1)	(b) Weighted Average exercise price of outstanding options and rights	(c) Number of securities remaining available for future issuance under equity compensation plan (excluding securities referenced in column (a))	
Equity compensation plans approved by security holders (2)	2,162,073	$ 9.07	1,211,609	(3)
Equity compensation plans not approved by security holders (4)	36,000	$ 10.00	—	
Total	2,198,073	$ 9.09	1,211,609	

(1) Does not include any restricted stock as such shares are already reflected in our outstanding shares.
(2) Consists of the 2008 Plan and the 2011 Plan.
(3) Includes securities available for future issuance under the 2008 Plan and the 2011 Plan.
(4) These options were issued to one of our current board members in connection with consulting services.

Item 6. Selected Financial Data.

The selected financial data set forth below as of December 31, 2016 and 2015, and for the years then ended has been derived from the audited consolidated financial statements of the Company, which are included elsewhere in this Annual Report on Form 10-K. We derived the consolidated financial data as of and for the years ended December 31, 2014, 2013 and 2012 from our audited consolidated financial statements that are not included elsewhere in this Annual Report on Form 10-K.

The information set forth below should be read in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the audited consolidated financial statements, and the notes thereto, and other financial information included herein. Our historical results are not necessarily indicative of our future results.

	Year Ended December 31,				
	2016	2015	2014	2013	2012
	(in thousands, expect per share data)				
Consolidated Statements of Operations Data:					
Revenue	**$ 27,049**	$ 18,040	$ 10,199	$ 6,610	$ 4,302
Cost of revenues	**17,104**	14,098	8,453	4,925	3,929
Gross profit (loss)	**9,945**	3,942	1,746	1,685	373
Operating expenses:					
Research and development	**5,967**	5,483	4,622	2,190	2,112
General and administrative	**16,034**	14,567	12,369	6,115	4,503
Sales and marketing	**4,668**	5,269	3,964	1,842	1,399
Total operating expenses	**26,669**	25,319	20,955	10,147	8,014
Loss from operations	**(16,724)**	(21,377)	(19,209)	(8,462)	(7,641)
Other income (expense):					
Interest expense	**(454)**	(344)	(473)	(2,388)	(4,701)
Interest income	**23**	49	74	30	—
Change in fair value of warrant liability	**1,525**	35	417	4,633	7,538
Change in fair value of acquisition note payable	**152**	269	198	—	—
Loss on debt and warrant restructuring	**—**	—	—	—	(1,862)
Other expense	**(325)**	—	—	(6,850)	—
Total other income (expense)	**921**	9	216	(4,575)	975
Loss before income taxes	**(15,803)**	(21,368)	(18,993)	(13,037)	(6,666)
Income tax (benefit)	**—**	(1,184)	(2,350)	(664)	—
Net (loss)	**$ (15,803)**	$ (20,184)	$ (16,643)	$ (12,373)	$ (6,666)
Basic net (loss) per share	**$ (1.00)**	$ (1.96)	$ (1.76)	$ (2.65)	$ (4.97)
Diluted net (loss) per share	**$ (1.00)**	$ (1.96)	$ (1.80)	$ (3.64)	$ (10.55)
Basic weighted average shares outstanding	**15,861**	10,298	9,449	4,665	1,342
Diluted weighted average shares outstanding	**15,861**	10,299	9,462	4,676	1,346

	Year Ended December 31,				
	2016	2015	2014	2013	2012
Consolidated Balance Sheet Data:			*(in thousands)*		
Cash and cash equivalents	**$ 9,502**	$ 19,459	$ 25,554	$ 49,460	$ 820
Working capital (deficit)	**12,378**	18,333	27,389	43,272	(9,612)
Total assets	**42,434**	48,884	47,105	55,157	8,952
Debt, excluding current portion	**2,654**	4,642	6,000	—	8,441
Accumulated deficit	**(113,954)**	(98,151)	(77,967)	(61,325)	(48,935)
Total stockholders' equity (deficit)	**$ 25,624**	$ 33,017	$ 34,554	$ 45,463	$ (23,981)

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

As used herein, the "Company," "we," "us," "our" or similar terms, refer to Cancer Genetics, Inc. and its wholly owned subsidiaries: Cancer Genetics Italia, S.r.l., Gentris, LLC and BioServe Biotechnologies (India) Private Limited, except as expressly indicated or unless the context otherwise requires. The following Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A") is intended to help facilitate an understanding of our financial condition and our historical results of operations for the periods presented. This MD&A should be read in conjunction with the audited consolidated financial statements and notes thereto included in this annual report on Form10-K. This MD&A may contain forward-looking statements that involve risks and uncertainties. For a discussion on forward-looking statements, see the information set forth in the Introductory Note to this Annual Report under the caption "Forward Looking Statements", which information is incorporated herein by reference.

Overview

We are an emerging leader in the field of precision medicine, enabling individualized therapies in the field of oncology through our diagnostic products and services and molecular markers. We develop, commercialize and provide molecular- and biomarker-based tests and services that enable physicians to personalize the clinical management of each individual patient by providing genomic information to better diagnose, monitor and inform cancer treatment and that enable biotech and pharmaceutical companies engaged in oncology trials to better select candidate populations and reduce adverse drug reactions by providing information regarding genomic factors influencing subject responses to therapeutics. We have a comprehensive, disease-focused oncology testing portfolio. Our tests and techniques target a wide range of cancers, covering nine of the top ten cancers in prevalence in the United States, with additional unique capabilities offered by our FDA-cleared Tissue of Origin® test for identifying difficult to diagnose tumor types or poorly differentiated metastatic disease.

Our vision is to become the oncology diagnostics partner for pharmaceutical and biotech companies and clinicians by participating in the entire care continuum from bench to bedside. We believe the oncology industry is undergoing a rapid evolution in its approach to diagnostic, prognostic and theranostic testing, embracing precision medicine and individualized testing as a means to drive higher standards of patient treatment and disease management. Similarly, pharmaceutical and biotech companies are increasingly working with precision diagnostic and molecular technology providers such as CGI to provide molecular profiles on clinical trial participants. These profiles may help identify biomarker and genomic variations that may be responsible for differing responses to oncology therapies, thereby increasing the efficiency of trials while lowering costs. We believe tailored and combination therapies can revolutionize oncology care through molecular- and biomarker-based testing services, enabling physicians and researchers to target the factors that make each patient and disease unique.

Our services are performed at our state-of-the-art laboratories located in New Jersey, North Carolina, California, Shanghai (China), and Hyderabad, India. Our laboratories comply with the highest regulatory standards as appropriate for the services they deliver including CLIA, CAP, NY State, California State and NABL (India). Our services are built on a foundation of world-class scientific knowledge and intellectual property in solid and blood-borne cancers, as well as strong academic relationships with major cancer centers such as Memorial Sloan-Kettering, Mayo Clinic, and the National Cancer Institute.

Our clinical offerings include our portfolio of proprietary tests targeting hematological, urogenital and HPV-associated cancers, in conjunction with ancillary non-proprietary tests. Our proprietary tests target cancers that are difficult to prognose and predict treatment outcomes through currently available mainstream techniques. We provide our proprietary tests and services, along with a comprehensive range of non-proprietary oncology-focused tests and laboratory services, to oncologists and pathologists at hospitals, cancer centers, and physician offices, as well as biotech and pharmaceutical companies to support their clinical trials. Our proprietary tests are based principally on our expertise in specific cancer types, test development methodologies and proprietary algorithms correlating genetic events with disease specific information. Our portfolio primarily includes comparative genomic hybridization (CGH) microarrays and next generation sequencing (NGS) panels, gene expression tests, and DNA fluorescent *in situ* hybridization (FISH) probes.

The non-proprietary testing services we offer are focused in part on specific oncology categories where we are developing our proprietary tests. We believe that there is significant synergy in developing and marketing a complete set of tests and services that are disease focused and delivering those tests and services in a comprehensive manner to help with treatment decisions. The insight that we develop in delivering the non-proprietary services are often leveraged in the development of our proprietary programs and now increasingly in the validation of our proprietary programs, such as MatBA and Focus::NGS.

We expect to continue to incur material losses for the near future. We incurred losses of $15.8 million and $20.2 million for fiscal years ended December 31, 2016 and 2015, respectively. As of December 31, 2016, we had an accumulated deficit of $114.0 million.

Acquisitions

On October 9, 2015, we acquired substantially all of the assets of Response Genetics, Inc. ("Response Genetics"), now referred to as CGI West, with its principal place of business in California, for aggregate consideration of approximately $12.9 million.

Key Factors Affecting our Results of Operations and Financial Condition

Our overall long-term growth plan is predicated on our ability to develop and commercialize our proprietary tests, penetrate the Pharmaceutical and Biotechnology (Biopharma) community to achieve more revenue supporting clinical trials and develop and penetrate the Indian market. Our proprietary tests include CGH microarrays, NGS panels, gene expression tests and DNA FISH probes. We continue to develop additional proprietary tests. To facilitate market adoption of our proprietary tests, we anticipate having to successfully complete additional studies with clinical samples and publish our results in peer-reviewed scientific journals. Our ability to complete such studies is dependent upon our ability to leverage our collaborative relationships with leading institutions to facilitate our research and obtain data for our quality assurance and test validation efforts.

We believe that the factors discussed in the following paragraphs have had and are expected to continue to have a material impact on our results of operations and financial condition.

Revenues

Our revenue is primarily generated through our Clinical Services and Biopharma Services. Clinical Services can be billed to Medicare, another third party insurer or the referring community hospital or other healthcare facility or patients in accordance with state and federal law. Biopharma Services are billed to the customer directly. While we have agreements with our Biopharma clients, volumes from these clients are subject to the progression and continuation of the clinical trials which can impact testing volume. We also derive limited revenue from Discovery Services, which are services provided in the development of new testing assays and methods. Discovery Services are billed directly to the customer.

We have historically derived a significant portion of our revenue from a limited number of test ordering sites, although the test ordering sites that generate a significant portion of our revenue have changed from period to period. Test ordering sites account for all of our Clinical Services revenue along with a portion of the Biopharma Services revenue. Our test ordering sites are hospitals, cancer centers, reference laboratories, physician offices, and pharmaceutical and biotechnology companies. Oncologists and pathologists at these sites order the tests on behalf of the needs of their oncology patients or as part of a clinical trial sponsored by a pharmaceutical or biotechnology company in which the patient is being enrolled.

The top five test ordering clients during 2016 and 2015 accounted for 31% and 49%, respectively, of our testing volumes, with 6% and 18%, respectively, of the test volume coming from community hospitals. During the year ended December 31, 2016, one Biopharma client accounted for approximately 16% of our revenue. During the year ended December 31, 2015 one Biopharma client accounted for approximately 19% of our revenue. The loss of our largest client would materially adversely affect our results of operations, however the loss of any other test ordering client would not materially adversely affect our results of operations.

We receive revenue for our Clinical Services from Medicare, other insurance carriers and other healthcare facilities. Some of our customers choose, generally at the beginning of our relationship, to pay for laboratory services directly as opposed to having patients (or their insurers) pay for those services and providing us with the patients' insurance information. A hospital may elect to be a direct bill customer and pay our bills directly, or may provide us with patient information so that their patients pay our bills, in which case we generally expect payment from their private insurance carrier or Medicare. In a few instances, we have arrangements where a hospital may have two accounts with us, so that certain tests are billed directly to the hospital, and certain tests are billed to and paid by a patient's insurer. The billing arrangements generally are dictated by our customers and in accordance with state and federal law.

For the year ended December 31, 2016, Medicare accounted for approximately 14% of our total revenue, other insurance accounted for approximately 20% of our total revenue and other healthcare facilities accounted for 5% of our total revenue. On average, we generate less revenue per test from other healthcare facilities billed directly, than from other insurance payors.

Cost of Revenues

Our cost of revenues consists principally of internal personnel costs, including non-cash stock-based compensation, laboratory consumables, shipping costs, overhead and other direct expenses, such as specimen procurement and third party validation studies. We are pursuing various strategies to reduce and control our cost of revenues, including automating our processes through more efficient technology and attempting to negotiate improved terms with our suppliers. In 2015, we acquired substantially all of the assets of Response Genetics in California. Overall, with three acquisitions completed, we have made significant progress with integrating our resources and services and leveraging enterprise wide purchasing power to gain supplier discounts, in an effort to reduce costs. We will continue to assess other possible advantages to help us improve our cost structure.

Operating Expenses

We classify our operating expenses into three categories: research and development, sales and marketing, and general and administrative. Our operating expenses principally consist of personnel costs, including non-cash stock-based compensation, outside services, laboratory consumables and overhead, development costs, marketing program costs and legal and accounting fees.

Research and Development Expenses. We incur research and development expenses principally in connection with our efforts to develop our proprietary tests. Our primary research and development expenses consist of direct personnel costs, laboratory equipment and consumables and overhead expenses. In 2013, we entered into a joint venture with the Mayo Foundation for Medical Education and Research, with a focus on developing oncology diagnostic services and tests utilizing next generation sequencing. These efforts continued throughout 2015 and 2016. All research and development expenses are charged to operations in the periods they are incurred.

General and Administrative Expenses. General and administrative expenses consist principally of personnel-related expenses, professional fees, such as legal, accounting and business consultants, occupancy costs, bad debt and other general expenses. We have incurred increases in our general and administrative expenses and anticipate further increases as we expand our business operations.

Sales and Marketing Expenses. Our sales and marketing expenses consist principally of personnel and related overhead costs for our sales team and their support personnel, travel and entertainment expenses, and other selling costs including sales collaterals and trade shows. We expect our sales and marketing expenses to increase as we expand into new geographies and add new clinical tests and services.

Seasonality

Our business experiences decreased demand during spring vacation season, summer months and the December holiday season when patients are less likely to visit their health care providers. We expect this trend in seasonality to continue for the foreseeable future.

Results of Operations

Years Ended December 31, 2016 and 2015

The following table sets forth certain information concerning our results of operations for the periods shown:

	Year Ended December 31,		Change	
	2016	2015	$	%
(dollars in thousands)				
Revenue	**$ 27,049**	$ 18,040	$ 9,009	50 %
Cost of revenues	**17,104**	14,098	3,006	21 %
Research and development expenses	**5,967**	5,483	484	9 %
General and administrative expenses	**16,034**	14,567	1,467	10 %
Sales and marketing expenses	**4,668**	5,269	(601)	-11 %
Total operating loss	**$ (16,724)**	$ (21,377)	$ 4,653	-22 %
Interest (expense)	**(431)**	(295)	(136)	46 %
Change in fair value of warrant liability	**1,525**	35	1,490	4,257 %
Change in fair value of acquisition note payable	**152**	269	(117)	-43 %
Other expense	**(325)**	—	(325)	N/A
Loss before income taxes	**(15,803)**	(21,368)	5,565	-26 %
Income tax benefit	**—**	1,184	(1,184)	-100 %
Net loss	**$ (15,803)**	$ (20,184)	$ 4,381	-22 %

Revenue

The breakdown of our revenue is as follows:

	Year Ended December 31,				Change	
	2016		2015			
(dollars in thousands)	$	%	$	%	$	%
Biopharma Services	**15,321**	**57%**	11,564	64%	3,757	32%
Clinical Services	**10,651**	**39%**	5,651	31%	5,000	88%
Discovery Services	**1,077**	**4%**	825	5%	252	31%
Total Revenue	**27,049**	**100%**	18,040	100%	9,009	50%

Revenue increased 50%, or $9.0 million, to $27.0 million for the year ended December 31, 2016, from $18.0 million for the year ended December 31, 2015, principally due to a full year of operations at CGI West, whose revenue accounted for $6.5 million of the increase. The remaining increase was driven by additional clinical trial studies, as we execute on a growing number of signed contracts with pharmaceutical and biotechnology companies, and continued growth of our Discovery Services. Our average revenue (excluding probe revenue) per test decreased to $421 per test for the year ended December 31, 2016 from $532 per test for the year ended December 31, 2015, principally due to the increased volume from our CGI West facility at lower average revenue per test. Overall test volumes increased by 142% from 19,996 tests for the year ended December 31, 2015 to 48,427 tests for the year ended December 31, 2016.

Revenue from Biopharma Services increased 32%, or $3.8 million, to $15.3 million for the year ended December 31, 2016, from $11.6 million for the year ended December 31, 2015, principally due to additional clinical trial studies performed at our New Jersey location which accounted for $2.9 million of the increase and a full year of operations at CGI West, which accounted for $1.6 million of the increase. These increases were partially offset by a decrease in Biopharma Services revenue of $0.7 million at our North Carolina location as we continue to leverage a multi-site strategy utilizing our diverse portfolio of diagnostic tests and medical and clinical staff expertise across our enterprise. Revenue from Clinical Services customers increased 88%, or $5.0 million, to $10.7 million for the year ended December 31, 2016, from $5.7 million for the year ended December 31, 2015, principally due to a full year of operations at CGI West, which accounted for $4.9 million of the increase. Revenue from Discovery Services increased $0.3 million, to $1.1 million for the year ended December 31, 2016, representing 4% of total revenue.

Cost of Revenues

Cost of revenues increased 21%, or $3.0 million, to $17.1 million for the year ended December 31, 2016, from $14.1 million for the year ended December 31, 2015, principally due to the following: increased costs of $3.8 million related to a full year of

operations at CGI West, and lab supplies expenses increased by $0.3 million or 7% as a result of higher test volumes. These increases were partially offset by a decrease in compensation of $1.1 million due to decreased headcounts and our focus on integrating prior acquisitions, executing on enterprise-wide purchasing programs and controlling direct labor costs.

Operating Expenses

Research and Development Expenses. Research and development expenses increased 9%, or $0.5 million, to $6.0 million for the year ended December 31, 2016, from $5.5 million for the year ended December 31, 2015. Research and development costs increased by $1.6 million, as we added scientific, medical and clinical expertise to our R&D initiatives from our staff at CGI West, and related supplies costs increased by $0.2 million, or 18%, as a result of an increase in R&D activities across the enterprise. These increases were partially offset by a decrease in our share of the loss from Oncospire, our joint venture with Mayo Clinic, of $0.6 million, or 90%, and a reduction in non-cash stock-based compensation of $0.2 million, or 61%. We also reduced collaboration costs by $0.4 million during the year ended December 31, 2016 due to the proximity to reaching commercialization of a developed test with our joint venture partner Mayo Clinic.

General and Administrative Expenses. General and administrative expenses increased 10%, or $1.5 million to $16.0 million for the year ended December 31, 2016, from $14.6 million for the year ended December 31, 2015. The increase primarily relates to the cost of operating CGI West for a full year, which increased general and administrative costs by $2.5 million. This increase was partially offset by a decrease in non-cash stock-based compensation of $0.6 million, or 30%, and a reduction in travel and entertainment costs of $0.3 million, or 66%.

Sales and Marketing Expenses. Sales and marketing expenses decreased 11%, or $0.6 million, to $4.7 million for the year ended December 31, 2016, from $5.3 million for the year ended December 31, 2015, principally due to the following: compensation costs decreased by $0.8 million, or 21%, as a result of decreased headcounts, along with a $0.1 million decrease in advertising and trade show expenses, a $0.1 million decrease in consulting fees and a $0.1 million decrease in travel and entertainment as a result of our efforts to cut costs. These decreases were offset partially by increased costs associated with operating CGI West for a full year of $0.6 million

Interest Income and Expense

Interest expense increased 46%, or $0.1 million, to $0.4 million for the year ended December 31, 2016, from $0.3 million for the year ended December 31, 2015, principally due to the higher interest rate related to debt that was refinanced in May 2015.

Change in Fair Value of Warrant Liability

Changes in fair value of some of our common stock warrants may impact our results. Accounting rules require us to record certain of our warrants as a liability, measure the fair value of these warrants each quarter and record changes in that value in earnings. As a result of a decrease in our stock price, we recognized non-cash income of $1.5 million for the year ended December 31, 2016, as compared to non-cash income of $35,000 for the year ended December 31, 2015. In the future, if our stock price increases, we would record a non-cash charge as a result of changes in the fair value of our common stock warrants. Consequently, we may be exposed to non-cash charges, or we may record non-cash income, as a result of this warrant exposure in future periods.

Change in Fair Value of Acquisition Note Payable

The change in fair value of the acquisition note payable resulted in $0.2 million in non-cash income for the year ended December 31, 2016, as compared to $0.3 million for the year ended December 31, 2015. The fair value of the note, representing part of the purchase price for BioServe, decreased as a consequence of a decrease in our stock price.

Other Expense

During the year ended December 31, 2016, we incurred $325,000 of expense resulting from the issuance of derivative warrants as part of the 2016 Offerings.

Income Taxes

In November 2015, we received $1.2 million from sales of state NOL's and research and development tax credits. No NOL's or research and development tax credits were sold during the year ended December 31, 2016.

Liquidity and Capital Resources

Sources of Liquidity

Our primary sources of liquidity have been funds generated from our debt financings and equity financings. In addition, we have generated funds from the following sources: (i) cash collections from customers and (ii) cash received from sale of state NOL's.

During November 2015, we received $1.2 million from sales of state NOL's and research and development tax credits.

In general, our primary uses of cash are providing for operating expenses, working capital purposes and servicing debt. On January 28, 2016, the Line of Credit was amended with SVB, and we are no longer able to draw on the Line of Credit until, as of December 31, 2016, we raise approximately $2.5 million of additional equity. On March 22, 2017, we restructured our debt with Silicon Valley Bank, by repaying the outstanding term loan and entering into a new two year $6.0 million asset-based revolving line of credit agreement. We concurrently entered into a new $6.0 million term loan agreement with Partners for Growth, which, on the day of closing, increased our indebtedness from $4.4 million to $6.0 million and increased our available cash by $1.6 million. We will be able to borrow up to $6.0 million on the revolver, based on a formula tied to eligible accounts receivable, which will increase our indebtedness dollar for dollar. In connection with such debt restructuring we issued warrants to such lenders to purchase an aggregate of 443,262 shares of our common stock.

Our largest source of operating cash flow is cash collections from our customers.

Offerings

In July 2015, we sold 2,800 shares of common stock that resulted in net proceeds to the Company of $34,000 through our sales agreement with Cantor Fitzgerald & Co.

On November 12, 2015, we sold 3,000,000 shares of common stock with warrants to purchase an aggregate of 3,000,000 shares of common stock at a combined public offering price of $4.00 per share and warrant resulting in gross proceeds of $12.0 million ($10.3 million of net proceeds after offering expenses and underwriting discounts). The underwriters also received 450,000 warrants pursuant to the partial exercise of the over-allotment option. The warrants have an exercise price of $5.00, became fully-exercisable at issuance and expire on November 12, 2020.

On May 25, 2016, we sold 2,467,820 shares of common stock in a public offering and warrants to purchase 1,233,910 shares of common stock in a concurrent private placement. These offerings resulted in gross proceeds of $5 million. We sold 2,150,000 shares of common stock and warrants to purchase 1,075,000 shares of common stock to certain institutional investors at a combined offering price of $2.00 per common share, and our Chairman of the Board, John Pappajohn, purchased 317,820 shares of common stock and warrants to purchase 158,910 shares of common stock at a combined offering price of $2.2025 per common share. In addition, we issued warrants to purchase an aggregate of 123,391 shares of common stock to the placement agent. Subject to certain ownership limitations, the warrants will be initially exercisable commencing six months from the issuance date at an exercise price equal to $2.25 per share of common stock. The warrants are exercisable for five years from the initial exercise date.

On September 14, 2016, we sold 2,750,000 shares of common stock in a public offering and warrants to purchase 1,375,000 shares of common stock in a concurrent private placement at a combined price of $2.00 per common share. These offerings resulted in gross proceeds of $5.5 million. In addition, we issued warrants to purchase an aggregate of 137,500 shares of common stock to the placement agent. Subject to certain ownership restrictions, the warrants will be initially exercisable six months from the issuance date at an exercise price of $2.25 per share of common stock. The warrants are exercisable for five years from the initial exercise date.

Credit Facility

On May 7, 2015, we entered into a new debt financing facility with Silicon Valley Bank ("SVB") to refinance the Company's cash collateralized loan from Wells Fargo and to provide an additional working capital line of credit. The SVB credit facility provides for a $6.0 million term note ("Term Note") and a revolving line of credit ("Line of Credit") for an amount not to exceed the lesser of (i) $4.0 million or (ii) an amount equal to 80% of eligible accounts receivable. The Term Note requires monthly principal payments of approximately $167,000 plus interest through maturity on April 1, 2019. The interest rate of the Term Note is the Wall Street Journal prime rate plus 2%, with a floor of 5.25% (5.75% at December 31, 2016) and an additional deferred interest payment of $180,000 will be due upon maturity. The Line of Credit requires monthly interest-only payments

of the Wall Street Journal prime rate plus 1.5% (5.25% at December 31, 2016) and matures on May 7, 2017. The new loan agreement requires maintenance of certain financial ratios and grants SVB a first security interest in substantially all Company assets (other than our intellectual property). Pursuant to the new loan agreement, we are no longer required to maintain restricted cash accounts. At December 31, 2016, the principal balance of the Term Note was $4.7 million and the principal balance of the Line of Credit was $0. Pursuant to the amendment dated January 28, 2016, we are restricted from using the Line of Credit until, as of December 31, 2016, $2.5 million of additional equity is raised.

On March 22, 2017, we restructured our debt with Silicon Valley Bank, by repaying the outstanding term loan and entering into a new two year asset-based revolving line of credit agreement. The new SVB credit facility provides for an asset-based line of credit ("ABL") for an amount not to exceed the lesser of $6.0 million or 80% of eligible accounts receivable plus the lesser of 50% of the net collectable value of 3rd party accounts receivable or three (3) times the average monthly collection amount of 3rd party accounts receivable over the previous quarter. The ABL requires monthly interest payments of the Wall Street Journal prime rate plus 1.5% (5.5% at March 22, 2017) and matures on March 22, 2019.

We concurrently entered into a new $6.0 million term loan agreement with Partners for Growth ("PFG"). The term note is an interest only loan with the full principal and any outstanding interest due at maturity on March 22, 2020. The interest rate of the term note is 11.5% per annum, and may reduce to 11.0% in 2018 based on achieving certain financial milestones set forth by PFG. In connection with such debt restructuring we issued 7 year warrants to such lenders to purchase an aggregate of 443,262 shares of our common stock at a price of $2.82 per share.

Cash Flows

Our net cash flow from operating, investing and financing activities for the periods below were as follows:

	Year Ended December 31,	
	2016	2015
(in thousands)		
Cash provided by (used in):		
Operating activities	**$ (17,851)**	$ (13,599)
Investing activities	**(609)**	(2,640)
Financing activities	**8,503**	10,144
Net increase (decrease) in cash and cash equivalents	**$ (9,957)**	$ (6,095)

We had cash and cash equivalents of $9.5 million at December 31, 2016 and $19.5 million at December 31, 2015.

The $10.0 million decrease in cash and cash equivalents for the year ended December 31, 2016 was principally the result of using $17.9 million of net cash in operations, investing $0.5 million in fixed assets and repaying $1.3 million of debt, offset by $10.0 million in net proceeds from the 2016 Offerings.

The $6.1 million decrease in cash and cash equivalents for the year ended December 31, 2015 was principally the result of the use of $13.6 million of net cash in operations, purchasing substantially all of assets of Response Genetics for $7.5 million (plus stock), and investing $1.0 million in fixed assets, offset by the $6.0 million decrease in restricted cash and the $10.3 million in net proceeds from the 2015 Offering.

Cash Used in Operating Activities

Net cash used in operating activities was $17.9 million for the year ended December 31, 2016. We used $12.2 million in net cash to run our core operations, including losses from operations and $0.3 million in cash paid for interest. We incurred additional uses of cash when adjusting for working capital items as follows: a net increase in accounts receivable of $5.9 million and a combined increase in other current and non-current assets of $0.1 million. All of these uses of cash were partially offset by a net increase in accounts payable, accrued expenses and deferred revenue of $0.4 million.

Net cash used in operating activities was $13.6 million for the year ended December 31, 2015. We used $15.7 million in net cash to run our core operations, which included $0.2 million in cash paid for interest. We incurred additional uses of cash when adjusting for working capital items as follows: a net increase in accounts receivable of $1.7 million; an increase in other current assets of $0.4 million and an increase in other assets of $0.1 million. All of these uses of cash were partially offset by a net

increase in accounts payable, accrued expenses and deferred revenue of $3.1 million and the receipt of $1.2 million from the sale of state NOL carryforwards and research and development credits in November 2015.

Cash Used in Investing Activities

Net cash used in investing activities was $0.6 million for the year ended December 31, 2016 and principally resulted from the purchase of fixed assets for $0.5 million and patent costs of $0.1 million.

Net cash used in investing activities was $2.6 million for the year ended December 31, 2015 and principally resulted from the purchase of substantially all assets of Response Genetics for $7.5 million, plus stock, and the purchase of fixed assets for $1.0 million, offset by the $6.0 million decrease in restricted cash resulting from refinancing our debt in May 2015.

Cash Used/Provided by Financing Activities

Net cash provided by financing activities was $8.5 million for the year ended December 31, 2016 principally due to the 2016 Offerings, which resulted in $10.0 million in net proceeds, offset by the repayment of $1.3 million in indebtedness and capital lease payments of $0.1 million.

Net cash used in financing activities was $10.1 million for the year ended December 31, 2015 principally due to the 2015 Offering, which resulted in $10.3 million in net proceeds, offset by capital lease payments of $0.1 million and equity issuance costs of $0.1 million.

Capital Resources, Acquisitions and Expenditure Requirements

We expect to continue to incur material operating losses in the future. It may take several years, if ever, to achieve positive operational cash flow. We may need to raise additional capital to fund our current operations, to repay certain outstanding indebtedness and to fund expansion of our business to meet our long-term business objectives through public or private equity offerings, debt financings, borrowings or strategic partnerships coupled with an investment in our company or a combination thereof. If we raise additional funds through the issuance of convertible debt securities, or other debt securities, these securities could be secured and could have rights senior to those of our common stock. In addition, any new debt incurred by the Company could impose covenants that restrict our operations and increase our interest expense. The issuance of any new equity securities will also dilute the interest of our current stockholders. Given the risks associated with our business, including our unprofitable operating history and our ability to develop additional proprietary tests, additional capital may not be available when needed on acceptable terms, or at all. If adequate funds are not available, we will need to curb our expansion plans or limit our research and development activities, which would have a material adverse impact on our business prospects and results of operations.

We believe that our current cash will support operations for at least the next 12 months from the date of this report. We continue to explore opportunities for additional equity or debt financing, and we are taking steps to improve our operating cash flow. We can provide no assurances that our current actions will be successful or that any additional sources of financing will be available to us on favorable terms, if at all, when needed. Our forecast of the period of time through which our current financial resources will be adequate to support our operations and the costs to support our general and administrative, sales and marketing and research and development activities are forward-looking statements and involve risks and uncertainties.

Management believes that its existing cash and cash equivalents, taken together with the net proceeds of the debt financing completed in March 2017, will be sufficient to fund the Company's operations for at least the next twelve months after filing this Annual Report on Form 10-K.

We expect our operating expenses to increase as we continue investing in sales and marketing, research and development and other general and administrative expenses.

Our forecast of the period of time through which our current financial resources will be adequate to support our operations and our expected operating expenses are forward-looking statements and involve risks and uncertainties. Actual results could vary materially and negatively as a result of a number of factors, including:

- our ability to achieve revenue growth and profitability;
- the costs for funding the operations we recently acquired;
- our ability to improve efficiency of billing and collection processes;
- our ability to obtain approvals for our new diagnostic tests;

- our ability to execute on our marketing and sales strategy for our tests and gain acceptance of our tests in the market;
- our ability to obtain adequate reimbursement from governmental and other third-party payors for our tests and services;
- the costs, scope, progress, results, timing and outcomes of the clinical trials of our tests;
- the costs of operating and enhancing our laboratory facilities;
- our ability to succeed with our cost control initiative;
- the timing of and the costs involved in regulatory compliance, particularly if the regulations change;
- the costs of maintaining, expanding and protecting our intellectual property portfolio, including potential litigation costs and liabilities;
- our ability to manage the costs of manufacturing our tests;
- our rate of progress in, and cost of research and development activities associated with, products in research and early development;
- the effect of competing technological and market developments;
- costs related to expansion;
- our ability to secure financing and the amount thereof; and
- other risks discussed in the section entitled "Risk Factors."

We expect that our operating expenses and capital expenditures will increase in the future as we expand our business. We plan to increase our sales and marketing headcount to promote our new clinical tests and services and to expand into new geographies and to continue our research and development expenditures associated with performing work with research collaborators, to expand our pipeline and to perform work associated with our research collaborations. For example, in 2011 we entered into an affiliation agreement to form a joint venture with the Mayo Foundation for Medical Education and Research pursuant to which we made an initial $1.0 million capital contribution in October 2013 and $1.0 million in the third quarter of 2014. We may make additional capital contributions of up to $4.0 million, subject to the joint venture entity's achievement of certain operational milestones. Until we can generate a sufficient amount of revenues to finance our cash requirements, which we may never do, we may need to raise additional capital to fund our operations.

Subject to the availability of future financing, we may use significant cash to fund acquisitions. On October 9, 2015, we acquired substantially all of the assets of Response Genetics for aggregate consideration of approximately $12.9 million consisting of $7.5 million in cash and our common stock valued at approximately $5.4 million.

Future Contractual Obligations

The following table reflects a summary of our estimates of future contractual obligations as of December 31, 2016. The information in the table reflects future unconditional payments and is based on the terms of the relevant agreements, appropriate classification of items under U.S. GAAP as currently in effect and certain assumptions, such as the interest rate on our variable debt that was in effect as of December 31, 2016. Future events could cause actual payments to differ from these amounts.

	Payments Due by Period				
Contractual Obligations	**Total**	**Less than 1 Year**	**1-3 Years**	**3-5 Years**	**More than 5 years**
(dollars in thousands)					
Principal and interest under notes payable and lines of credit	$ 4,991	$ 2,216	$ 2,775	$ —	$ —
Capital Lease obligations, including interest, for equipment	549	136	243	170	—
Operating lease obligations relating to corporate headquarters and clinical laboratories	2,783	1,712	896	175	—
Total	$ 8,323	$ 4,064	$ 3,914	$ 345	$ —

Income Taxes

Over the past several years we have generated operating losses in all jurisdictions in which we may be subject to income taxes. As a result, we have accumulated significant net operating losses and other deferred tax assets. Because of our history of losses and the uncertainty as to the realization of those deferred tax assets, a full valuation allowance has been recognized. We do not

expect to report a benefit related to the deferred tax assets until we have a history of earnings, if ever, that would support the realization of our deferred tax assets.

Off-Balance Sheet Arrangements

Since inception, we have not engaged in any off balance sheet activities as defined in Item 303(a)(4) of Regulation S-K.

Critical Accounting Policies and Significant Judgment and Estimates

Our management's discussion and analysis of financial condition and results of operations is based on our consolidated financial statements, which have been prepared in accordance with U.S. GAAP. The preparation of our consolidated financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue and expenses and related disclosure of contingent assets and liabilities. On an ongoing basis, we evaluate our estimates based on historical experience and make various assumptions, which management believes to be reasonable under the circumstances, which form the basis for judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

Section 107 of the JOBS Act provides that an "emerging growth company can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act for complying with new or revised accounting standards. In other words, an "emerging growth company" can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. However, we have chosen to "opt out" of such extended transition period, and as a result, we will comply with new or revised accounting standards on the relevant dates on which adoption of such standards is required for non-emerging growth companies. Section 107 of the JOBS Act provides that our decision to opt out of the extended transition period for complying with new or revised accounting standards is irrevocable.

The notes to our audited consolidated financial statements contain a summary of our significant accounting policies. We consider the following accounting policies critical to the understanding of the results of our operations:

- Revenue recognition;
- Accounts receivable and bad debts;
- Stock-based compensation; and
- Warrant liability.

Item 7A. Qualitative and Quantitative Disclosures about Market Risk

We have exposure to financial market risks, including changes in foreign currency exchange rates and interest rates, and risk associated with how we invest our cash.

Foreign Exchange Risk

We conduct business in foreign markets through our subsidiary in India (BioServe Biotechnologies (India) Private Limited) and in Italy through our subsidiary (Cancer Genetics Italia, S.r.l.). For the years ended December 31, 2016 and 2015, approximately 4% and 5%, respectively, of our revenues were earned outside the United States and collected in local currency. We are subject to risk for exchange rate fluctuations between such local currencies and the United States dollar and the subsequent translation of the Indian Rupee or Euro to United States dollars. We currently do not hedge currency risk. The translation adjustments for the years ended December 31, 2016 and 2015 were not significant.

Interest Rate Risk

At December 31, 2016, we had interest rate risk primarily related to borrowings of $4.7 million on the term note with Silicon Valley Bank ("Silicon Valley Line"). Borrowings under the Silicon Valley term note bear interest at the Wall Street Journal prime rate plus 2%, with a floor of 5.25% (5.75% at December 31, 2016). If interest rates increased by 1.0%, interest expense in 2017 on our current borrowings would increase by approximately $37,000.

Investment of Cash

We invest our cash primarily in money market funds. Because of the short-term nature of these investments, we do not believe we have material exposure due to market risk. The impact to our financial position and results of operations from likely changes in interest rates is not material.

Item 8. Financial Statements and Supplementary Data

INDEX TO FINANCIAL STATEMENTS

Cancer Genetics, Inc. and Subsidiaries

Consolidated Financial Report December 31, 2016

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders
Cancer Genetics, Inc. and Subsidiaries

We have audited the accompanying consolidated balance sheets of Cancer Genetics, Inc. and subsidiaries as of December 31, 2016 and 2015, and the related consolidated statements of operations, changes in stockholders' equity, and cash flows for the years then ended. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audit included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Cancer Genetics, Inc. and subsidiaries as of December 31, 2016 and 2015, and the results of their operations and their cash flows for the years then ended in conformity with U.S. generally accepted accounting principles.

/s/ RSM US LLP

New York, New York
March 23, 2017

CANCER GENETICS, INC. AND SUBSIDIARIES

Consolidated Balance Sheets

(in thousands, except par value)

	December 31,	
	2016	2015
ASSETS		
CURRENT ASSETS		
Cash and cash equivalents	**$ 9,502**	$ 19,459
Accounts receivable, net of allowance for doubtful accounts of 2016 $1,387; 2015 $664	**11,748**	6,621
Other current assets	**2,174**	2,118
Total current assets	**23,424**	28,198
FIXED ASSETS, net of accumulated depreciation	**4,738**	6,069
OTHER ASSETS		
Restricted cash	**300**	300
Patents and other intangible assets, net of accumulated amortization	**1,503**	1,727
Investment in joint venture	**268**	341
Goodwill	**12,029**	12,029
Other	**172**	220
Total other assets	**14,272**	14,617
Total Assets	**$ 42,434**	$ 48,884
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES		
Accounts payable and accrued expenses	**$ 8,148**	$ 7,579
Obligations under capital leases, current portion	**109**	122
Deferred revenue	**789**	831
Bank term note, current portion	**2,000**	1,333
Total current liabilities	**11,046**	9,865
Bank term note	**2,654**	4,642
Obligations under capital leases	**374**	276
Deferred rent payable and other	**290**	315
Warrant liability	**2,018**	17
Deferred revenue, long-term	**428**	752
Total Liabilities	**16,810**	15,867
STOCKHOLDERS' EQUITY		
Preferred stock, authorized 9,764 shares $0.0001 par value, none issued	**—**	—
Common stock, authorized 100,000 shares, $0.0001 par value, 18,936 and 13,652 shares issued and outstanding as of December 31, 2016 and 2015, respectively	**2**	1
Additional paid-in capital	**139,576**	131,167
Accumulated deficit	**(113,954)**	(98,151)
Total Stockholders' Equity	**25,624**	33,017
Total Liabilities and Stockholders' Equity	**$ 42,434**	$ 48,884

See Notes to Consolidated Financial Statements.

CANCER GENETICS, INC. AND SUBSIDIARIES

Consolidated Statements of Operations

(in thousands, except per share amounts)

	Years Ended December 31,	
	2016	2015
Revenue	**$ 27,049**	$ 18,040
Cost of revenues	**17,104**	14,098
Gross profit	**9,945**	3,942
Operating expenses:		
Research and development	**5,967**	5,483
General and administrative	**16,034**	14,567
Sales and marketing	**4,668**	5,269
Total operating expenses	**26,669**	25,319
Loss from operations	**(16,724)**	(21,377)
Other income (expense):		
Interest expense	**(454)**	(344)
Interest income	**23**	49
Change in fair value of warrant liability	**1,525**	35
Change in fair value of acquisition note payable	**152**	269
Other expense	**(325)**	—
Total other income (expense)	**921**	9
Loss before income taxes	**(15,803)**	(21,368)
Income tax (benefit)	**—**	(1,184)
Net (loss)	**$ (15,803)**	$ (20,184)
Basic net (loss) per share	**$ (1.00)**	$ (1.96)
Diluted net (loss) per share	**$ (1.00)**	$ (1.96)
Basic weighted average shares outstanding	**15,861**	10,298
Diluted weighted average shares outstanding	**15,861**	10,299

See Notes to Consolidated Financial Statements.

CANCER GENETICS, INC. AND SUBSIDIARIES

Consolidated Statements of Changes in Stockholders' Equity
Years Ended December 31, 2016 and 2015
(in thousands)

	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Total
	Shares	Amount			
Balance, December 31, 2014	9,821	1	112,520	(77,967)	34,554
Stock based compensation - employees	35	—	2,558	—	2,558
Stock based compensation - non-employees	—	—	276	—	276
Exercise of warrants	—	—	1	—	1
Exercise of options	4	—	23	—	23
Issuance of stock - Cantor Sales Agreement	3	—	34	—	34
Issuance of stock - acquisition of Response Genetics	789	—	5,436	—	5,436
Issuance of stock with warrants in 2015 Offering	3,000	—	10,319	—	10,319
Net loss	—	—	—	(20,184)	(20,184)
Balance, December 31, 2015	13,652	1	131,167	(98,151)	33,017
Stock based compensation—employees	16	—	1,978	—	1,978
Stock based compensation—non-employees	—	—	38	—	38
Issuance of stock - consultant	50	—	75	—	75
Issuance of stock in 2016 Offerings	5,218	1	6,318	—	6,319
Net loss	—	—	—	(15,803)	(15,803)
Balance, December 31, 2016	18,936	$ 2	$ 139,576	$ (113,954)	$ 25,624

See Notes to Consolidated Financial Statements

CANCER GENETICS, INC. AND SUBSIDIARIES

Consolidated Statements of Cash Flows

(in thousands)

	Years Ended December 31,	
	2016	2015
CASH FLOWS FROM OPERATING ACTIVITIES		
Net loss	**$ (15,803)**	$ (20,184)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	**2,032**	1,503
Amortization	**343**	159
Provision for bad debts	**723**	413
Stock-based compensation	**2,016**	2,834
Stock issued for consulting services	**75**	—
Change in fair value of acquisition note payable	**(152)**	269
Change in fair value of Gentris contingent consideration	**—**	(207)
Change in fair value of warrant liability	**(1,525)**	(35)
Amortization of loan guarantee, financing fees and debt issuance costs	**12**	8
Loss in equity-method investment	**73**	707
Change in working capital components:		
Accounts receivable	**(5,850)**	(1,662)
Other current assets	**(56)**	(384)
Other non-current assets	**(69)**	(101)
Accounts payable, accrued expenses and deferred revenue	**355**	3,114
Deferred rent and other	**(25)**	(33)
Net cash (used in) operating activities	**(17,851)**	(13,599)
CASH FLOWS FROM INVESTING ACTIVITIES		
Purchase of fixed assets	**(490)**	(1,008)
Decrease in restricted cash	**—**	6,000
Patent costs	**(119)**	(137)
Cash used in acquisition of Response Genetics	**—**	(7,495)
Net cash (used in) investing activities	**(609)**	(2,640)
CASH FLOWS FROM FINANCING ACTIVITIES		
Principal payments on capital lease obligations	**(126)**	(83)
Payment of equity issuance costs	**—**	(117)
Proceeds from public offerings of equity, net of offering costs	**9,962**	10,353
Proceeds from warrant exercises	**—**	1
Proceeds from option exercises	**—**	23
Payment of debt issuance costs	**—**	(33)
Principal payments on notes payable	**(1,333)**	—
Net cash provided by financing activities	**8,503**	10,144
Net (decrease) in cash and cash equivalents	**(9,957)**	(6,095)
CASH AND CASH EQUIVALENTS		
Beginning	**19,459**	25,554
Ending	**$ 9,502**	$ 19,459
SUPPLEMENTAL CASH FLOW DISCLOSURE		
Cash paid for interest	**$ 333**	$ 240
SUPPLEMENTAL DISCLOSURE OF NONCASH INVESTING AND FINANCING ACTIVITIES		
Fixed assets acquired through capital lease arrangements	**$ 211**	$ —
Value of shares issued as partial consideration to purchase Response Genetics	**—**	5,436
Net tangible assets acquired via acquisition	**—**	2,843

See Notes to Consolidated Financial Statements.

CANCER GENETICS, INC. AND SUBSIDIARIES

Notes to Consolidated Financial Statements

Note 1. Organization, Description of Business and Offerings

We are an emerging leader in the field of precision medicine, enabling individualized therapies in the field of oncology through our diagnostic products and services and molecular markers. We develop, commercialize and provide molecular- and biomarker-based tests and services that enable physicians to personalize the clinical management of each individual patient by providing genomic information to better diagnose, monitor and inform cancer treatment and that enable biotech and pharmaceutical companies engaged in oncology trials to better select candidate populations and reduce adverse drug reactions by providing information regarding genomic factors influencing subject responses to therapeutics. We have a comprehensive, disease-focused oncology testing portfolio. Our tests and techniques target a wide range of cancers, covering nine of the top ten cancers in prevalence in the United States, with additional unique capabilities offered by our FDA-cleared Tissue of Origin® test for identifying difficult to diagnose tumor types or poorly differentiated metastatic disease.

We were incorporated in the State of Delaware on April 8, 1999 and have offices and state-of-the-art laboratories located in California, New Jersey, North Carolina, Shanghai (China), and Hyderabad (India). Our laboratories comply with the highest regulatory standards as appropriate for the services they deliver including CLIA, CAP, NY State, California State and NABL (India). Our services are built on a foundation of world-class scientific knowledge and intellectual property in solid and blood-borne cancers, as well as strong academic relationships with major cancer centers such as Memorial Sloan-Kettering, Mayo Clinic, and the National Cancer Institute.

2015 Offering

On November 12, 2015, we sold 3,000,000 shares of common stock with warrants to purchase an aggregate of 3,000,000 shares of common stock at a combined public offering price of $4.00 per share and warrant resulting in gross proceeds of $12.0 million ($10.3 million of net proceeds after offering expenses and underwriting discounts). The underwriters also received 450,000 warrants pursuant to the partial exercise of the over-allotment option. The warrants have an exercise price of $5.00, became fully-exercisable at issuance and expire on November 12, 2020. All references to the sales of common stock with warrants mentioned in this paragraph are referred to as the “2015 Offering.”

2016 Offerings

May Offering

On May 25, 2016, we sold 2,467,820 shares of common stock in a public offering and warrants to purchase 1,233,910 shares of common stock in a concurrent private placement. These offerings resulted in gross proceeds of $5 million. We sold 2,150,000 shares of common stock and warrants to purchase 1,075,000 shares of common stock to certain institutional investors at a combined offering price of $2.00 per common share, and our Chairman of the Board, John Pappajohn, purchased 317,820 shares of common stock and warrants to purchase 158,910 shares of common stock at a combined offering price of $2.2025 per common share. In addition, we issued warrants to purchase an aggregate of 123,391 shares of common stock to the placement agent. Subject to certain ownership limitations, the warrants were initially exercisable commencing six months from the issuance date at an exercise price equal to $2.25 per share of common stock. The warrants are exercisable for five years from the initial exercise date. All references to the sales of common stock with warrants mentioned in this paragraph, along with the September Offering below, are referred to as the “2016 Offerings.”

September Offering

On September 14, 2016, we sold 2,750,000 shares of common stock in a public offering and warrants to purchase 1,375,000 shares of common stock in a concurrent private placement at a combined price of $2.00 per common share. These offerings resulted in gross proceeds of $5.5 million. In addition, we issued warrants to purchase an aggregate of 137,500 shares of common stock to the placement agent. Subject to certain ownership restrictions, the warrants will be initially exercisable six months from the issuance date at an exercise price of $2.25 per share of common stock. The warrants are exercisable for five years from the initial exercise date. All references to the sales of common stock with warrants mentioned in this paragraph, along with the May Offering above, are referred to as the “2016 Offerings.”

Note 2. Significant Accounting Policies

Basis of presentation: We prepare our financial statements on the accrual basis of accounting in accordance with accounting principles generally accepted in the United States of America.

Segment reporting: Operating segments are defined as components of an enterprise about which separate discrete information is used by the chief operating decision maker, or decision-making group, in deciding how to allocate resources and in assessing performance. We view our operations and manage our business in one operating segment, which is the business of developing and selling diagnostic tests and services.

Liquidity and going concern: At December 31, 2016, our cash position and history of losses required management to asses our ability to continue operating as a going concern, according to FASB Accounting Standards Update No. 2014-15, Disclosure of Uncertainties about an Entity's Ability to Continue as a Going Concern ("ASU 2014-15"). Management evaluated the history and operational losses to have a material effect on our ability to continue as a going concern, unless we take actions to alleviate those conditions. Our primary sources of liquidity have been funds generated from our debt financings and equity financings. Subsequent to December 31, 2016, we were able to restructure our senior debt with our lender and secure additional debt capital with another lender to increase our cash positon and have available funds to operate, and we completed the sale of State of New Jersey net operating loss carryforwards in early 2017 (Note 20 Subsequent Events). We have reduced, and plan to continue reducing, our operating expenses, and expect to grow our revenue in 2017 and beyond, and have also increased our cash collections from our customers and third-party payors and plan to continue to improve our cash collection results.

Management believes that its existing cash and cash equivalents, taken together with the net proceeds of the debt financing completed in March 2017, will be sufficient to fund the Company's operations for at least the next twelve months after filing this Annual Report on Form 10-K.

Principles of consolidation: The accompanying consolidated financial statements include the accounts of Cancer Genetics, Inc. and our wholly owned subsidiaries.

All significant intercompany account balances and transactions have been eliminated in consolidation.

Use of estimates and assumptions: The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Significant estimates made by management include, among others, realization of amounts billed, realization of long-lived assets, realization of intangible assets, accruals for litigation and registration payments, assumptions used to value stock options, warrants and goodwill and the valuation of assets acquired and liabilities assumed from acquisitions. Actual results could differ from those estimates.

Risks and uncertainties: We operate in an industry that is subject to intense competition, government regulation and rapid technological change. Our operations are subject to significant risk and uncertainties including financial, operational, technological, regulatory, foreign operations, and other risks, including the potential risk of business failure.

Cash and cash equivalents: Highly liquid investments with original maturities of three months or less when purchased are considered to be cash equivalents. Financial instruments which potentially subject us to concentrations of credit risk consist primarily of cash and cash equivalents. We maintain cash and cash equivalents with high-credit quality financial institutions. At times, such amounts may exceed insured limits. We have not experienced any losses in such accounts and believe we are not exposed to any significant credit risk on our cash and cash equivalents.

Restricted cash: Represents cash held at financial institutions which we may not withdraw and which collateralizes certain of our financial commitments. All of our restricted cash is invested in interest bearing certificates of deposit. Our restricted cash collateralizes a $300,000 letter of credit in favor of our landlord, pursuant to the terms of the lease for our Rutherford facility.

Revenue recognition: The Company recognizes revenue in accordance with Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") 605, as well as SEC Staff Accounting Bulletin 104, for its Biopharma and Discovery Services, and ASC 954-605, Health Care Entities, Revenue Recognition for its Clinical Services. These standards generally require that four basic criteria must be met before revenue can be recognized: (1) persuasive evidence that an arrangement exists; (2) delivery has occurred and title and the risks and rewards of ownership have been transferred to the customer or services have been rendered; (3) the price is fixed or determinable; and (4) collectability is reasonably assured. In determining whether the price is fixed or determinable, we consider payment limits imposed by insurance carriers and

Medicare, and the amount of revenue recorded takes into account the historical percentage of revenue we have collected for each type of test for each payor category. Periodically, an adjustment is made to Clinical Services revenue to record differences between our anticipated cash receipts from third parties, such as insurance carriers and Medicare and actual receipts from such payors. For the periods presented, such adjustments were not significant. For some Clinical Service and Biopharma customers billed directly, revenue is recorded based upon the contractually agreed upon fee schedule. When assessing collectability, we consider whether we have sufficient payment history to reliably estimate a payor's individual payment patterns. We do not bill customers for shipping and handling fees, other than reimbursement of such expenses we incur on behalf of our Biopharma clients, and we do not collect any sales or other taxes from customers.

Accounts receivable: Accounts receivable are carried at net realizable value, which is the original invoice amount less an estimate for contractual adjustments, discounts and doubtful receivables, the amounts of which are determined by an analysis of individual accounts. Our policy for assessing the collectability of receivables is dependent upon the major payor source of the underlying revenue. For Biopharma and Discovery clients, an assessment of credit worthiness is performed prior to initial engagement and is reassessed periodically. If deemed necessary, an allowance is established on receivables from direct bill clients. For Clinical Services clients, we record revenues and related receivables when the testing process is complete and the results are reported. Revenue is recorded at the expected price, taking into account the patient's ability to pay, as well as anticipated discounts, adjustments and/or contractual allowances, as applicable. After reasonable collection efforts are exhausted, amounts deemed to be uncollectible are written off against the allowance for doubtful accounts. Since the Company only recognizes revenue to the extent it expects to collect such amounts, bad debt expense related to receivables from patient service revenue is recorded in general and administrative expense in the consolidated statements of operations. Recoveries of accounts receivable previously written off are recorded when received.

Deferred revenue: Payments received in advance of services rendered are recorded as deferred revenue and are subsequently recognized as revenue in the period in which the services are performed.

Fixed assets: Fixed assets consist of diagnostic equipment, furniture and fixtures and leasehold improvements. Fixed assets are carried at cost and are depreciated using the straight-line method over the estimated useful lives of the assets, which generally range from five to seven years. Leasehold improvements are depreciated over the lesser of the lease term or the estimated useful lives of the improvements using the straight-line method. Repairs and maintenance are charged to expense as incurred while improvements are capitalized. Upon sale, retirement or disposal of fixed assets, the accounts are relieved of the cost and the related accumulated depreciation with any gain or loss recorded to the consolidated statements of operations.

Fixed assets are reviewed for impairment whenever changes in circumstances indicate that the carrying amount of an asset may not be recoverable. These computations utilize judgments and assumptions inherent in our estimate of future cash flows to determine recoverability of these assets. If our assumptions about these assets were to change as a result of events or circumstances, we may be required to record an impairment loss.

Goodwill: Goodwill resulted from the purchases of Gentris Corporation ("Gentris") and BioServe Biotechnologies (India) Pvt. Ltd. ("BioServe") in 2014 and the purchase of Response Genetics, Inc. ("Response Genetics") in 2015, as described in Note 16. In accordance with ASC 350, Intangibles - Goodwill and Other, we are required to test goodwill for impairment and adjust for impairment losses, if any, at least annually and on an interim basis if an event or circumstance indicates that it is likely impairment has occurred. Our annual goodwill impairment testing date is October 1 of each year. No such losses were incurred during the years ended December 31, 2016 and 2015.

Goodwill (in thousands)		
Balance, December 31, 2014	$	3,187
Purchased through acquisition of Response Genetics		8,842
Balance, December 31, 2015 and 2016	$	12,029

Loan guarantee and financing fees: Loan guarantee fees are amortized on a straight-line basis over the term of the guarantee. Financing fees are amortized using the effective interest method over the term of the related debt.

Warrant liability: We have issued certain warrants which contain an exercise price adjustment feature in the event we issue additional equity instruments at a price lower than the exercise price of the warrant. We have also issued warrants containing a contingent net cash settlement feature. The warrants are described herein as derivative warrants. We account for these derivative warrants as liabilities. These common stock purchase warrants do not trade in an active securities market, and as such, we estimate the fair value of these warrants using the binomial lattice valuation pricing model with the assumptions as follows: The risk-free interest rate for periods within the contractual life of the warrant is based on the U.S. Treasury yield

curve. The expected life of the warrants is based upon the contractual life of the warrants. Prior to 2016, volatility was estimated based on an average of the historical volatilities of the common stock of four entities with characteristics similar to those of the Company. Effective January 1, 2016, we began using the historical volatility of our common stock. We used the closing price of our shares on the NASDAQ Capital Market.

We compute the fair value of the warrant liability at each reporting period and the change in the fair value is recorded as non-cash expense or non-cash income. The key component in the value of the warrant liability is our stock price, which is subject to significant fluctuation and is not under our control. The resulting effect on our net income (loss) is therefore subject to significant fluctuation and will continue to be so until the warrants are exercised, amended or expire. Assuming all other fair value inputs remain constant, we will record non-cash expense when the stock price increases and non-cash income when the stock price decreases.

Income taxes: Income taxes are provided for the tax effects of transactions reported in the consolidated financial statements and consist of taxes currently due plus deferred income taxes. Deferred income taxes are recognized for temporary differences between the financial statement and tax bases of assets and liabilities that will result in taxable or deductible amounts in the future. Deferred income taxes are also recognized for net operating loss carryforwards that are available to offset future taxable income and research and development credits.

Valuation allowances are established when necessary to reduce deferred tax assets to the amount expected to be realized. We have established a full valuation allowance on our deferred tax assets as of December 31, 2016 and 2015, therefore we have not recognized any tax benefit or expense in the periods presented.

ASC 740, Income Taxes, clarifies the accounting for uncertainty in income taxes recognized in the financial statements. ASC 740 provides that a tax benefit from uncertain tax positions may be recognized when it is more-likely-than-not that the position will be sustained upon examination, including resolutions of any related appeals or litigation processes, based on the technical merits of the position. Income tax positions must meet a more-likely-than-not recognition threshold to be recognized. ASC 740 also provides guidance on measurement, de-recognition, classification, interest and penalties, accounting in interim periods, disclosure and transition. At December 31, 2016 and 2015 we had no uncertain tax positions.

Our policy is to recognize interest and/or penalties related to income tax matters in income tax expense. There is no accrual for interest or penalties on our consolidated balance sheets at December 31, 2016 or 2015, and we have not recognized interest and/or penalties in the consolidated statements of operations for the years ended December 31, 2016 or 2015.

Patents and other intangible assets: We account for intangible assets under ASC 350-30. Patents consisting of legal fees incurred are initially recorded at cost. We have also acquired patents that are initially recorded at fair value. Patents are amortized over the useful lives of the assets, using the straight-line method. Certain patents are in the legal application process and therefore are not currently being amortized. We review the carrying value of patents at the end of each reporting period. Based upon our review, there were no patent impairments in 2016 or 2015.

Other intangible assets consist of software acquired with Response Genetics, which are amortized using the straight-line method over the estimated useful lives of the assets, which range from three to five years.

Research and development: Research and development costs associated with service and product development include direct costs of payroll, employee benefits, stock-based compensation and supplies and an allocation of indirect costs including rent, utilities, depreciation and repairs and maintenance. All research and development costs are expensed as they are incurred.

Stock-based compensation: Stock-based compensation is accounted for in accordance with the provisions of ASC 718, *Compensation-Stock Compensation*, which requires the measurement and recognition of compensation expense for all stock-based awards made to employees and directors based on estimated fair values on the grant date. We estimate the fair value of stock-based awards on the date of grant using the Black-Scholes option pricing model. The value of the portion of the award that is ultimately expected to vest is recognized as expense over the requisite service periods using the straight-line method. See additional information in Note 12.

All issuances of stock options or other issuances of equity instruments to employees as the consideration for services received by us are accounted for based on the fair value of the equity instrument issued.

We account for stock-based compensation awards to non-employees in accordance with ASC 505-50, *Equity Based Payments to Non-Employees*. Under ASC 505-50, we determine the fair value of the warrants or stock-based compensation awards granted as either the fair value of the consideration received or the fair value of the equity instruments issued, whichever is

more reliably measurable. Stock-based compensation awards issued to non-employees are recorded in expense and additional paid-in capital in stockholders' equity (deficit) over the applicable service periods based on the fair value of the awards or consideration received at the vesting date.

Fair value of financial instruments: The carrying amount of cash and cash equivalents, restricted cash, accounts receivable, accounts payable and accrued expenses, approximate their estimated fair values due to the short term maturities of those financial instruments. The fair value of warrants recorded as derivative liabilities, contingent consideration and note payable to VenturEast are described in Notes 14 and 15.

Joint venture accounted for under the equity method: The Company records its joint venture investment following the equity method of accounting, reflecting its initial investment in the joint venture and its share of the joint venture's net earnings or losses and distributions. The Company's share of the joint venture's net loss was approximately $73,000 in 2016 and $707,000 in 2015 and is included in research and development expense on the Consolidated Statements of Operations. The Company has a net receivable due from the joint venture of approximately $10,000 at both December 31, 2016 and 2015, which is included in other assets in the Consolidated Balance Sheets. See additional information in Note 18.

Subsequent events: We have evaluated potential subsequent events through the date the financial statements were issued.

Recent Accounting Pronouncements: In February 2016, the FASB issued ASU 2016-02, "Leases (Topic 842)," which provides guidance for accounting for leases. Under ASU 2016-02, the Company will be required to recognize the assets and liabilities for the rights and obligations created by leased assets. ASU 2016-02 will take effect for public companies for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2018. The Company is currently evaluating the effect this standard will have on the consolidated financial statements.

In May 2014, the FASB issued ASU 2014-09, Revenue from Contracts with Customers (Topic 606), requiring an entity to recognize the amount of revenue to which it expects to be entitled for the transfer of promised goods or services to customers. As issued and amended, ASU 2014-09 will replace most existing revenue recognition guidance in U.S. GAAP when it becomes effective and permits the use of either a full retrospective or retrospective with cumulative effect transition method. The updated standard becomes effective for the Company in the first quarter of fiscal year 2018. Early adoption is permitted in the first quarter of fiscal year 2017. The Company believes its Biopharma Service revenue could be affected by the new standard. The Company is presently evaluating its Biopharma Service contacts for multiple elements and variable consideration provisions that may affect the timing of revenue recognition subsequent to ASU 2014-09's adoption. The Company expects to adopt the new standard on January 1, 2018, using the modified retrospective approach, which involves applying the new standard to all contracts initiated on or after the effective date and recording an adjustment to opening equity for pre-existing contracts that have remaining obligations as of the effective date.

In January 2017, the FASB issued ASU 2017-01, Business Combinations (Topic 805) "Clarifying the Definition of a Business." ASU 2017-01 clarifies the definition of a business with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The updated standard is effective for annual periods beginning after December 15, 2017, including interim periods within those periods. The Company is currently evaluating the effect this standard will have on the consolidated financial statements.

In August 2016, the FASB issued ASU 2016-15, Statement of Cash Flows (Topic 230) "Classification of Certain Cash Receipts and Cash Payments." ASU 2016-15 provides guidance on statement of cash flow presentation for eight specific cash flow issues where diversity in practice exists. The updated standard is effective for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. The Company is currently evaluating the effect this standard will have on the consolidated financial statements.

In March 2016, the FASB issued ASU 2016-09, Compensation - Stock Compensation (Topic 718) "Improvements to Employee Share-Based Payment Accounting." ASU 2016-09 simplifies several aspects of the accounting for share-based payment transactions, including the income tax consequences, classification of awards as either equity or liabilities and classification on the statements of cash flows. The updated standard is effective for annual periods beginning after December 15, 2016, and interim periods within those annual periods. We do not expect ASU 2016-09 to have a material impact on our financial statements.

In January 2017, the FASB issued ASU 2017-04, Intangibles - Goodwill and Other (Topic 350): "Simplifying the Accounting for Goodwill Impairment," which removes the requirement to perform a hypothetical purchase price allocation to measure goodwill impairment. A goodwill impairment will now be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. ASU 2017-04 is effective for annual periods beginning after December

15, 2019, and interim periods within those annual periods. Early adoption is permitted and applied prospectively. We do not expect ASU 2017-04 to have a material impact to our financial statements.

In November 2016, the FASB issued ASU 2016-18, Statement of Cash Flows (Topic 230): "Restricted Cash," clarifying the treatment of restricted cash accounts on the statements of cash flows. ASU 2016-18 indicates that restricted cash accounts should be included with cash and cash equivalents when reconciling the beginning of year and end of year total amounts shown on the statements of cash flows. ASU 2016-18 is effective for fiscal years beginning after December 15, 2017. The Company is currently evaluating the effect this standard will have on the consolidated financial statements.

Earnings (loss) per share: Basic earnings (loss) per share is computed by dividing net income (loss) available to common stockholders by the weighted average number of common shares assumed to be outstanding during the period of computation. Diluted earnings per share is computed similar to basic earnings per share except that the numerator is adjusted for the change in fair value of the warrant liability (only if dilutive) and the denominator is increased to include the number of dilutive potential common shares outstanding during the period using the treasury stock method.

Basic net loss and diluted net loss per share data were computed as follows (in thousands, except per share amounts):

	2016	2015
Numerator:		
Net (loss) for basic earnings per share	**$ (15,803)**	$ (20,184)
Less change in fair value of warrant liability	**—**	35
Net (loss) for diluted earnings per share	**$ (15,803)**	$ (20,219)
Denominator:		
Weighted-average basic common shares outstanding	**15,861**	10,298
Assumed conversion of dilutive securities:		
Common stock purchase warrants	**—**	1
Potentially dilutive common shares	**—**	1
Denominator for diluted earnings per share—adjusted weighted-average shares	**15,861**	10,299
Basic net loss per share	**$ (1.00)**	$ (1.96)
Diluted net loss per share	**$ (1.00)**	$ (1.96)

The following table summarizes potentially dilutive adjustments to the weighted average number of common shares which were excluded from the calculation (in thousands):

	2016	2015
Common stock purchase warrants	**7,033**	4,372
Stock options	**2,198**	1,961
Restricted shares of common stock	**80**	121
	9,311	6,454

Note 3. Revenue and Accounts Receivable

Revenue by service type for each of the years ended December 31 is comprised of the following (in thousands):

	2016	2015
Biopharma Services	**$ 15,321**	$ 11,564
Clinical Services	**10,651**	5,651
Discovery Services	**1,077**	825
	$ 27,049	$ 18,040

The table above includes approximately $2,085,000 of biopharma services revenue and approximately $6,190,000 of clinical services revenue from our acquisition of Response Genetics for the year ended December 31, 2016. The table above includes approximately $486,000 of biopharma services revenue and approximately $1,265,000 of clinical services revenue from our acquisition of Response Genetics for the period October 9, 2015 through December 31, 2015.

Accounts receivable by service type at December 31, 2016 and 2015 consists of the following (in thousands):

	2016	2015
Biopharma Services	**$ 3,683**	$ 3,238
Clinical Services	**8,972**	3,733
Discovery Services	**480**	314
Allowance for doubtful accounts	**(1,387)**	(664)
	$ 11,748	$ 6,621

Allowance for Doubtful Accounts (in thousands)	
Balance, December 31, 2014	$ 251
Additions to allowance for doubtful accounts	413
Balance, December 31, 2015	664
Additions to allowance for doubtful accounts	723
Balance, December 31, 2016	$ 1,387

Revenue for Biopharma Services are customized solutions for patient stratification and treatment selection through an extensive suite of DNA-based testing services. Biopharma Services are billed to pharmaceutical and biotechnology companies. Clinical Services are tests performed to provide information on diagnosis, prognosis and theranosis of cancers to guide patient management. Clinical Services tests can be billed to Medicare, another third party insurer or the referring community hospital or other healthcare facility. Discovery Services are services that provide the tools and testing methods for companies and researchers seeking to identify new DNA-based biomarkers for disease. The breakdown of our Clinical Services revenue (as a percent of total revenue) is as follows:

	2016	2015
Medicare	**14%**	10%
Other insurers	**20%**	12%
Other healthcare facilities	**5%**	9%
Total Clinical Services	**39%**	31%

We have historically derived a significant portion of our revenue from a limited number of test ordering sites. Test ordering sites account for all of our Clinical Services revenue. Our test ordering sites are largely hospitals, cancer centers, reference laboratories, physician offices and biopharmaceutical companies. Oncologists and pathologists at these sites order the tests on behalf of the needs of their oncology patients or as part of a clinical trial sponsored by a biopharmaceutical company in which the patient is being enrolled. We generally do not have formal, long-term written agreements with such test ordering sites, and, as a result, we may lose a significant test ordering site at any time.

The top five test ordering clients during 2016 and 2015 accounted for 31% and 49%, respectively, of our testing volumes, with 6% and 18%, respectively, of the test volume coming from community hospitals. During the year ended December 31, 2016, one Biopharma client accounted for approximately 16% of our revenue. During the year ended December 31, 2015, one Biopharma client accounted for approximately 19% of our revenue.

Note 4. Other Current Assets

At December 31, 2016 and 2015, other current assets consisted of the following (in thousands):

	2016	2015
Inventory	**$ 146**	$ 133
Prepaid expenses	**2,028**	1,985
	$ 2,174	$ 2,118

Note 5. Lease Commitments

We lease our laboratory, research facility and administrative office space under various operating leases. We have approximately 17,900 square feet of office and laboratory space in Rutherford, New Jersey, 24,900 square feet in Morrisville, North Carolina, 19,100 square feet in Los Angeles, California, 10,000 square feet in Hyderabad, India and 2,700 square feet in Shanghai, China. We have escalating lease agreements for both our New Jersey and North Carolina spaces which expire January 2018 and May 2020, respectively. These leases require monthly rent with periodic rent increases that vary from $1 to $2 per square foot of the rented premises per year. The difference between minimum rent and straight-line rent is recorded as deferred rent payable. The terms of our New Jersey lease require that a $300,000 security deposit for the facility be held in a stand by letter of credit in favor of the landlord (see Note 7).

We acquired office and scientific equipment under long term leases which have been capitalized at the present value of the minimum lease payments. The equipment under these capital leases had a cost of $916,600 and accumulated depreciation of $279,788, as of December 31, 2016.

Minimum future lease payments under all capital and operating leases as of December 31, 2016 are as follows (in thousands):

	Capital Leases	Operating Leases	Total
December 31,			
2017	$ 136	$ 1,712	$ 1,848
2018	130	513	643
2019	113	383	496
2020	102	175	277
2021	68	—	68
Thereafter	—	—	—
Total minimum lease payments	$ 549	$ 2,783	$ 3,332
Less amount representing interest	66		
Present value of net minimum obligations	483		
Less current obligation under capital lease	109		
Long-term obligation under capital lease	$ 374		

Rent expense for the years ended December 31, 2016 and 2015 was approximately $1.7 million and $1.1 million, respectively.

Note 6. Bank Term Note and Line of Credit

On May 7, 2015, we entered into a debt financing facility with Silicon Valley Bank ("SVB") to refinance the Company's cash collateralized loan from Wells Fargo and to provide an additional working capital line of credit. The SVB credit facility provides for a $6.0 million term note ("Term Note") and a revolving line of credit ("Line of Credit") for an amount not to exceed the lesser of (i) $4.0 million or (ii) an amount equal to 80% of eligible accounts receivable. The Term Note requires interest-only payments through April 30, 2016 and beginning May 1, 2016, monthly principal payments of approximately$167,000 will be required plus interest through maturity on April 1, 2019. The interest rate of the Term Note is the Wall Street Journal prime rate plus 2%, with a floor of 5.25% (5.75% and 5.50% at December 31, 2016 and 2015, respectively) and an additional deferred interest payment of $180,000 will be due upon maturity. The Line of Credit requires monthly interest-only payments of the Wall Street Journal prime rate plus 1.5% (5.25% and 5.00% at December 31, 2016 and 2015, respectively) and matures on May 7, 2017. The loan agreement requires maintenance of certain financial ratios and grants SVB a first security interest in substantially all Company assets (other than our intellectual property). At December 31, 2016 and 2015, the principal balance of the Term Note was $4,666,667 and $6,000,000, respectively, and the principal balance of the Line of Credit was $0. On January 28, 2016, the Line of Credit was amended with SVB and as of December 31, 2016, we were no longer able to draw on the Line of Credit until we raised approximately $2.5 million of additional equity. The Term Loan and Line of Credit were subsequently paid, see Note 20 Subsequent Events.

The following is a summary of long-term debt as of December 31 (in thousands):

	2016	2015
Term note, principal balance	**$ 4,667**	$ 6,000
Less unamortized debt issuance costs	**13**	25
Term note, net	**4,654**	5,975
Less current maturities	**2,000**	1,333
Long-term portion	**$ 2,654**	$ 4,642

Principal maturities of the Term Note as of December 31, 2016 are as follows: 2017 - $2,000,000; 2018 - $2,000,000; 2019 - $666,667.

Note 7. Letter of Credit

We maintain a $300,000 letter of credit in favor of our landlord pursuant to the terms of the lease for our Rutherford facility. At December 31, 2016 the letter of credit was fully secured by the restricted cash disclosed on our Consolidated Balance Sheet.

Note 8. Fixed Assets

Fixed assets are summarized by major classifications as follows (in thousands):

	2016	2015
Equipment	**$ 9,094**	$ 8,442
Furniture and fixtures	**1,068**	1,083
Leasehold improvements	**932**	932
	11,094	10,457
Less accumulated depreciation	**(6,356)**	(4,388)
Net fixed assets	**$ 4,738**	$ 6,069

Note 9. Patents and Other Intangible Assets

Patents and other intangible assets consist of the following at December 31, 2016 and 2015:

	(in thousands) 2016	(in thousands) 2015	Weighted-Average Amortization Period
Patents	**$ 843**	$ 724	10 years
Patents - Response Genetics acquisition	**800**	800	7 years
Software - Response Genetics acquisition	**446**	446	2 years
	2,089	1,970	
Less accumulated amortization	**(586)**	(243)	
Net patent and other intangible assets	**$ 1,503**	$ 1,727	

Future amortization expense for legally approved patents (excluding patent applications in progress of approximately $444,000 as of December 31, 2016) and other intangible assets, is estimated as follows (in thousands):

2017	$	289
2018		200
2019		153
2020		145
2021		139
2022 and thereafter		133
Total	$	1,059

Note 10. Income Taxes

The provision (benefit) for income taxes for the years ended December 31, 2016 and 2015 differs from the approximate amount of income tax benefit determined by applying the U.S. federal income tax rate to pre-tax loss, due to the following:

	For the Year Ended December 31, 2016		For the Year Ended December 31, 2015	
	Amount (in thousands)	**% of Pretax Loss**	**Amount (in thousands)**	**% of Pretax Loss**
Income tax benefit at federal statutory rate	**$ (5,531)**	**35.0 %**	$ (7,479)	35.0 %
State tax provision, net of federal tax benefit	**(777)**	**4.9 %**	(878)	4.1 %
Tax credits	**(342)**	**2.2 %**	(232)	1.1 %
Stock based compensation	**206**	**(1.3)%**	201	(0.9)%
Derivative warrants	**(534)**	**3.4 %**	(12)	0.1 %
Investor consideration	**—**	**— %**	(110)	0.5 %
Change in valuation allowance	**7,459**	**(47.2)%**	6,617	(31.0)%
Foreign operations	**251**	**(1.6)%**	283	(1.3)%
Other	**(732)**	**4.6 %**	426	(2.1)%
Income tax (benefit) provision	**$ —**	**— %**	$ (1,184)	5.5 %

During November 2015, we sold $15,990,475 of gross State of New Jersey net operating loss (“NOL”) carryforwards relating to the 2013 and 2014 tax years as well as $289,978 of research and development tax credits, resulting in the receipt of $1,183,564, net of expenses. On February 22, 2017, we sold $18,177,059 of gross State of New Jersey NOL’s relating to the 2014 and 2015 tax years as well as $167,572 of state research and development tax credits, resulting in the receipt of approximately $950,000, net of expenses.

We transferred the NOL carryforwards through the Technology Business Tax Certificate Transfer Program sponsored by the New Jersey Economic Development Authority.

Approximate deferred taxes consist of the following components as of December 31, 2016 and 2015 (in thousands):

	2016	2015
Deferred tax assets:		
Net operating loss carryforwards	**$ 32,273**	$ 25,085
Accruals and reserves	**1,829**	1,100
Non-qualified stock options	**3,882**	3,357
Research and development tax credits	**1,331**	989
Derivative warrant liability	**26**	26
Investment in joint venture	**250**	251
Goodwill	**—**	283
Fixed assets	**—**	78
Other	**8**	6
Total deferred tax assets	**39,599**	31,175
Less valuation allowance	**(38,634)**	(31,175)
Net deferred tax assets	**965**	—
Deferred tax liabilities		
Fixed assets	**(401)**	—
Goodwill and intangible assets	**(564)**	—
Net deferred taxes	**$ —**	$ —

Due to a history of losses we have generated since inception, we believe it is more-likely-than-not that all of the deferred tax assets will not be realized as of December 31, 2016 and 2015. Therefore, we have recorded a full valuation allowance on our deferred tax assets. We have net operating loss carryforwards for federal income tax purposes of approximately $87 million as of December 31, 2016. The net operating loss carryforwards will begin to expire in 2027. Utilization of these carryforwards is subject to limitation due to ownership changes that may delay the utilization of a portion of the carryforwards.

Note 11. Capital Stock

Cantor Sales Agreement

In July 2015, we sold 2,800 shares of common stock that resulted in net proceeds to the Company of $34,000.

2015 Offering

On November 12, 2015, we sold 3,000,000 shares of common stock with warrants to purchase an aggregate of 3,000,000 shares of common stock at a combined public offering price of $4.00 per share and warrant resulting in gross proceeds of $12.0 million ($10.3 million of net proceeds after offering expenses and underwriting discounts). The underwriters also received 450,000 warrants pursuant to the partial exercise of the over-allotment option. The warrants have an exercise price of $5.00, became fully-exercisable at issuance and expire on November 12, 2020.

2016 Offerings

May Offering

On May 25, 2016, we sold 2,467,820 shares of common stock in a public offering and warrants to purchase 1,233,910 shares of common stock in a concurrent private placement. These offerings resulted in gross proceeds of $5 million. We sold 2,150,000 shares of common stock and warrants to purchase 1,075,000 shares of common stock to certain institutional investors at a combined offering price of $2.00 per common share, and our Chairman of the Board, John Pappajohn, purchased 317,820 shares of common stock and warrants to purchase 158,910 shares of common stock at a combined offering price of $2.2025 per common share. In addition, we issued warrants to purchase an aggregate of 123,391 shares of common stock to the placement agent. Subject to certain ownership limitations, the warrants were initially exercisable commencing six months from the issuance date at an exercise price equal to $2.25 per share of common stock. The warrants are exercisable for five years from the initial exercise date.

September Offering

On September 14, 2016, we sold 2,750,000 shares of common stock in a public offering and warrants to purchase 1,375,000 shares of common stock in a concurrent private placement at a combined price of $2.00 per common share. These offerings resulted in gross proceeds of $5.5 million. In addition, we issued warrants to purchase an aggregate of 137,500 shares of common stock to the placement agent. Subject to certain ownership restrictions, the warrants will be initially exercisable six months from the issuance date at an exercise price of $2.25 per share of common stock. The warrants are exercisable for five years from the initial exercise date.

Stock Issued to Consultant

On October 24, 2016, we issued 50,000 shares of common stock to Maxim, LLC ("Maxim") at a value of $1.50 per common share in exchange for consulting services.

Preferred Stock

We are currently authorized to issue up to 9,764,000 shares of preferred stock. As of December 31, 2016 and 2015, no shares of preferred stock were outstanding.

Note 12. Stock-Based Compensation

We have two equity incentive plans: the 2008 Stock Option Plan (the "2008 Plan") and the 2011 Equity Incentive Plan (the "2011 Plan", and together with the 2008 Plan, the "Stock Option Plans"). The Stock Option Plans are meant to provide additional incentive to officers, employees and consultants to remain in our employment. Options granted are generally exercisable for up to 10 years.

The Board of Directors adopted the 2011 Plan on June 30, 2011 and reserved 350,000 shares of common stock for issuance under the 2011 Plan. On May 22, 2014, May 14, 2015 and on October 11, 2016, the stockholders voted to increase the number of shares reserved by the plan to 2,000,000, 2,650,000, and 3,150,000 shares of common stock, respectively, under several types of equity awards including stock options, stock appreciation rights, restricted stock awards and other awards defined in the 2011 Plan.

The Board of Directors adopted the 2008 Plan on April 29, 2008 and reserved 251,475 shares of common stock for issuance under the plan. On April 1, 2010, the stockholders voted to increase the number of shares reserved by the plan to 550,000. We are authorized to issue incentive stock options or non-statutory stock options to eligible participants, as defined in the 2008 Plan.

We have also issued 48,000 options outside of the Stock Option Plans.

At December 31, 2016, 1,097,355 shares remain available for future awards under the 2011 Plan and 114,254 shares remain available for future awards under the 2008 Plan.

As of December 31, 2016, no stock appreciation rights and 293,000 shares of restricted stock had been awarded under the Stock Option Plans.

A summary of employee and non-employee stock option activity for the years ended December 31, 2016 and 2015 is as follows:

	Options Outstanding		Weighted-Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in thousands)
	Number of Shares (in thousands)	Weighted-Average Exercise Price		
Outstanding January 1, 2015	1,839	$ 10.58	8.49	$ 618
Granted	312	9.77		
Exercised	(4)	5.37		
Cancelled or expired	(186)	9.69		
Outstanding December 31, 2015	1,961	$ 10.55	7.68	$ —
Granted	417	1.95		
Cancelled or expired	(180)	8.44		
Outstanding December 31, 2016	2,198	$ 9.09	7.04	$ —
Exercisable, December 31, 2016	1,343	$ 10.18	6.13	$ —

Aggregate intrinsic value represents the difference between the fair value of our common stock and the exercise price of outstanding, in-the-money options. No options were exercised during the year ended December 31, 2016. During the year ended December 31, 2015, we received $23,480 from the exercise of options.

As of December 31, 2016, total unrecognized compensation cost related to non-vested stock options granted to employees was $2,971,371, which we expect to recognize over the next 2.3 years.

As of December 31, 2016, total unrecognized compensation cost related to non-vested stock options granted to non-employees was $19,500, which we expect to recognize over the next 1.0 years.

The fair value of options granted to employees is estimated on the grant date using the Black-Scholes option valuation model. This valuation model for stock-based compensation expense requires us to make assumptions and judgments about the variables used in the calculation, including the fair value of our common stock, the expected term (the period of time that the options granted are expected to be outstanding), the volatility of our common stock, a risk-free interest rate, and expected dividends. We also estimate forfeitures of unvested stock options. To the extent actual forfeitures differ from the estimates, the difference will be recorded as a cumulative adjustment in the period estimates are revised. No compensation cost is recorded for options that do not vest. We use the simplified calculation of expected life described in the SEC's Staff Accounting Bulletin No. 107, Share-Based Payment, and volatility is based on an average of the historical volatilities of the common stock of three entities with characteristics similar to those of the Company. The risk-free rate is based on the U.S. Treasury yield curve in effect at the time of grant for periods corresponding with the expected life of the option. We use an expected dividend yield of zero, as we do not anticipate paying any dividends in the foreseeable future. Expected forfeitures are assumed to be zero due to the plan design which has monthly vesting after an initial cliff vesting period.

The following table presents the weighted-average assumptions used to estimate the fair value of options granted to employees during the periods presented:

	Year Ended December 31,	
	2016	2015
Volatility	**73.86 %**	60.69 %
Risk free interest rate	**1.25 %**	1.63 %
Dividend yield	**—**	—
Term (years)	**5.93**	6.13
Weighted-average fair value of options granted during the period	**$ 1.26**	$ 5.54

In October 2013, we issued 10,000 options to a non-employee with an exercise price of $15.39. In May 2014, we issued 200,000 options to a Director, with an exercise price of $15.89. See Note 19 for additional information. The following table

presents the weighted-average assumptions used to estimate the fair value of options reaching their measurement date for non-employees during the periods presented:

	Year Ended December 31,	
	2016	2015
Volatility	**74.08 %**	70.38 %
Risk free interest rate	**1.64 %**	2.10 %
Dividend yield	**—**	—
Term (years)	**7.76**	8.73

Restricted stock awards have been granted to employees, directors and consultants as compensation for services. At December 31, 2016, there was $400,575 of unrecognized compensation cost related to non-vested restricted stock granted to employees; we expect to recognize the cost over 1.8 years.

The following table summarizes the activities for our non-vested restricted stock awards for the years ended December 31, 2016 and 2015:

	Non-vested Restricted Stock Awards	
	Number of Shares (in thousands)	**Weighted-Average Grant Date Fair Value**
Non-vested at January 1, 2015	133	$ 8.14
Granted	48	9.50
Vested	(47)	9.09
Forfeited/cancelled	(13)	9.03
Non-vested at December 31, 2015	121	$ 8.25
Granted	18	1.81
Vested	(57)	8.99
Forfeited/cancelled	(2)	9.02
Non-vested at December 31, 2016	80	$ 6.30

The following table presents the effects of stock-based compensation related to stock option and restricted stock awards to employees and non-employees on our Consolidated Statements of Operations during the periods presented (in thousands):

	Year Ended December 31,	
	2016	2015
Cost of revenues	**$ 290**	$ 233
Research and development	**172**	360
General and administrative	**1,446**	2,106
Sales and marketing	**108**	135
Total stock-based compensation	**$ 2,016**	$ 2,834

Note 13. Warrants

Prior to 2015, we issued certain warrants containing an exercise price adjustment (identified as Financing and Series B Pref. Stock under the heading “derivative” in the table below). For these warrants, in the event new equity instruments were issued at a price lower than the exercise price of the warrant, the exercise price would be adjusted to the new equity instruments issued (price adjustment feature). These warrants were initially recorded as a warrant liability, with any subsequent change in their fair value recognized in earnings until the warrants were exercised, amended or expired. At December 31, 2015, 60,200 of these warrants were outstanding. At December 31, 2016, all of these warrants had either been exercised or expired. During 2016, we issued warrants containing a contingent net cash settlement feature (identified as 2016 Offerings under the heading “derivative” in the table below). These warrants are recorded as a warrant liability, and all subsequent changes in their fair value are recognized in earnings until they are exercised, amended or expired.

A significant number of our warrants are held by Mr. Pappajohn, the Chairman of our Board of Directors and stockholder. See Note 19 for additional details on these warrants.

On April 1, 2015, 19,138 warrants expired unexercised.

On November 12, 2015, the Company issued 3,000,000 warrants in conjunction with the 2015 Offering and an additional 450,000 warrants pursuant to the underwriter’s partial exercise of the over-allotment option. The warrants have an exercise price of $5.00 per share and will expire November 12, 2020. See Note 11. We have evaluated the terms and conditions of warrants issued with the 2015 Offering and determined the warrants should be included in equity and are not required to be reported as a liability.

On November 12, 2015, the exercise price of 75,215 warrants were adjusted from $10.00 per common share to $4.00 per common share due to 2015 Offering and the exercise price adjustment feature in certain warrants.

On November 18, 2015, 14,665 warrants expired unexercised and the Company received $1,400 from a warrant holder who exercised warrants to purchase 350 shares of common stock at $4.00 per share.

On December 9, 2015, 120,000 warrants held by Mr. Pappajohn expired unexercised.

On February 21, 2016 and March 23, 2016, 200 and 70,000 warrants expired unexercised, respectively.

On May 25, 2016, we issued 1,357,301 warrants to purchase shares of our common stock as part of our May Offering. Subject to certain ownership limitations, the warrants will be initially exercisable commencing six months from the issuance date at an exercise price equal to $2.25 per share of common stock. The warrants are exercisable for five years from the initial exercise date. These warrants contain a contingent net cash settlement feature and are part of the 2016 Offerings derivative warrants in the table below.

On June 30, 2016, 86,533 warrants held by Mr. Pappajohn expired unexercised.

On September 14, 2016, we issued 1,512,500 warrants to purchase shares of our common stock as part of our September Offering. Subject to certain ownership limitations, the warrants will be initially exercisable commencing six months from the issuance date at an exercise price equal to $2.25 per share of common stock. The warrants are exercisable for five years from the initial exercise date. These warrants also contain a contingent net cash settlement feature and are part of the 2016 Offerings derivative warrants in the table below.

On December 1, 2016 and December 21, 2016, 37,000 and 75,294 warrants held by Mr. Pappajohn expired unexercised, respectively.

The following table summarizes the warrant activity for the years ending December 31, 2016 and 2015 (in thousands, except exercise price):

Issued With / For	Exercise Price		Warrants Outstanding January 1, 2015	2015 Warrants Issued	2015 Offering Adjustments (B)	2015 Warrants Expired	Warrants Outstanding December 31, 2015	2016 Warrants Issued	2016 Warrants Expired	Warrants Outstanding December 31, 2016
Non-Derivative Warrants:										
Financing	$ 10.00		243	—	—	—	243	—	—	243
Financing	15.00		436	—	—	—	436	—	(75)	361
Debt Guarantee	15.00		353	—	—	(120)	233	—	(124)	109
Consulting	10.00		29	—	—	(19)	10	—	(10)	—
2015 Offering	5.00		—	3,450	—	—	3,450	—	—	3,450
	$ 6.42	D	1,061	3,450	—	(139)	4,372	—	(209)	4,163
Derivative Warrants:										
Financing	4.00	A	—	—	60	—	60	—	(60)	—
Financing	10.00	A	60	—	(60)	—	—	—	—	—
Series B Pref. Stock	4.00	A	—	—	15	(15)	—	—	—	—
Series B Pref. Stock	10.00	A	15	—	(15)	—	—	—	—	—
2016 Offerings	2.25	C	—	—	—	—	—	2,870	—	2,870
	$ 2.25	D	75	—	—	(15)	60	2,870	(60)	2,870
	$ 4.72	D	1,136	3,450	—	(154)	4,432	2,870	(269)	7,033

A These warrants are subject to fair value accounting and contain an exercise price adjustment feature. See Note 14.

B On November 12, 2015 the Company completed the 2015 Offering and the exercise price of certain derivative warrants were adjusted to $4.00.

C These warrants are subject to fair value accounting and contain a contingent net cash settlement feature. See Note 14.

D Weighted average exercise prices are as of December 31, 2016.

Note 14. Fair Value of Warrants

The following tables summarize the assumptions used in computing the fair value of derivative warrants subject to fair value accounting at the date of issue at December 31, 2016 and 2015 and during the years then ended.

Series B	Exercised During the Year Ended December 31, 2015
Exercise Price	$ 4.00
Expected life (years)	0.01
Expected volatility	12.33%
Risk-free interest rate	0.07%
Expected dividend yield	0.00%

Financing	As of December 31, 2015
Exercise Price	$ 4.00
Expected life (years)	0.23
Expected volatility	70.82%
Risk-free interest rate	0.16%
Expected dividend yield	0.00%

2016 Offerings	Issued During the Year Ended December 31, 2016	As of December 31, 2016
Exercise Price	$ 2.25	2.25
Expected life (years)	5.50	5.06
Expected volatility	74.36%	72.82%
Risk-free interest rate	1.30%	1.93%
Expected dividend yield	0.00%	0.00%

The assumed ranges of Company stock prices used in computing the warrant fair value for warrants issued during the year is as follows: in 2016, $1.35—$2.14; in 2015, $3.30—$11.76. In determining the fair value of warrants issued at each reporting date, the assumed Company stock price was $1.35 and $3.30 (the closing price on the NASDAQ Capital Market) at December 31, 2016 and 2015.

The following table summarizes the derivative warrant activity subject to fair value accounting for the years ended December 31, 2016 and 2015 (in thousands):

	Issued with 2016 Offerings	Issued with Series B Preferred Stock	Issued For Financing	Total
Fair value of warrants outstanding as of January 1, 2015	—	8	44	52
Change in fair value of warrants	—	(8)	(27)	(35)
Fair value of warrants outstanding as of December 31, 2015	—	—	17	17
Fair value of warrants issued	3,526	—	—	3,526
Change in fair value of warrants	(1,508)	—	(17)	(1,525)
Fair value of warrants outstanding as of December 31, 2016	$ 2,018	$ —	$ —	$ 2,018

Note 15. Fair Value Measurements

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. The Fair Value Measurements and Disclosures Topic of the FASB Accounting Standards Codification requires the use of valuation techniques that are consistent with the market approach, the income approach and/or the cost approach. Inputs to valuation techniques refer to the assumptions that market participants would use in pricing the asset or liability. Inputs may be observable, meaning those that reflect the assumptions market participants would use in pricing the asset or liability developed based on market data obtained from independent sources, or unobservable, meaning those that reflect our own assumptions about the assumptions market participants would use in pricing the asset or liability developed based on the best information available in the circumstances. In that regard, the Topic establishes a fair value hierarchy for valuation inputs that give the highest priority to quoted prices in active markets for identical assets or liabilities and the lowest priority to unobservable inputs.

The fair value hierarchy is as follows:

Level 1: Quoted prices (unadjusted) for identical assets or liabilities in active markets that we have the ability to access as of the measurement date.

Level 2: Significant other observable inputs other than Level 1 prices such as quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable market data.

Level 3: Significant unobservable inputs that reflect our own assumptions about the assumptions that market participants would use in pricing an asset or liability.

The following table summarizes the financial liabilities measured at fair value on a recurring basis segregated by the level of valuation inputs within the fair value hierarchy utilized to measure fair value (in thousands):

	2016			
	Total	**Quoted Prices in Active Markets for Identical Assets (Level 1)**	**Significant Other Observable Inputs (Level 2)**	**Significant Unobservable Inputs (Level 3)**
Warrant liability	**$ 2,018**	—	—	**$ 2,018**
Notes payable	**114**	—	—	**114**
	$ 2,132	—	—	**$ 2,132**

	2015			
	Total	**Quoted Prices in Active Markets for Identical Assets (Level 1)**	**Significant Other Observable Inputs (Level 2)**	**Significant Unobservable Inputs (Level 3)**
Warrant liability	$ 17	—	—	$ 17
Notes payable	266	—	—	266
	$ 283	—	—	$ 283

At December 31, 2016, the warrant liability consists of stock warrants issued as part of the 2016 Offerings that contain contingent redemption features. At December 31, 2015, the warrant liability consists of stock warrants we issued that contain an exercise price adjustment feature. In accordance with derivative accounting for warrants, we calculated the fair value of warrants and the assumptions used are described in Note 14, “Fair Value of Warrants.” Realized and unrealized gains and losses related to the change in fair value of the warrant liability are included in other income (expense) on the Consolidated Statements of Operations.

The value of the Gentris contingent consideration was determined using a discounted cash flow of the expected payments required by the purchase agreement. During the year ended December 31, 2015 we recognized a gain of $207,000 due to settling the contingent consideration for $86,400.

The ultimate payment to VenturEast will be the value of 84,278 shares of common stock at the time of payment. The value of the note payable to VenturEast was determined using the fair value of our common stock less a discount for credit risk. During the years ended December 31, 2016 and 2015, we recognized a gain of $152,000 and $269,000, respectively, due to the decrease in value of the note.

Realized and unrealized gains and losses related to the change in fair value of the Gentris contingent consideration are included in general and administrative expense, while realized and unrealized gains and losses related to the VenturEast note are included in other income (expense) on the Consolidated Statements of Operations.

A table summarizing the activity for the derivative warrant liability which is measured at fair value using Level 3 inputs is presented in Note 14. The following table summarizes the activity of the notes payable to VenturEast and Gentris contingent consideration which were measured at fair value using Level 3 inputs (in thousands):

	Note Payable to VenturEast	Gentris Contingent Consideration
Fair value at January 1, 2015	$ 535	$ 293
Change in fair value	(269)	(207)
Settlement of liability	—	(86)
Fair value at December 31, 2015	$ 266	$ —
Change in fair value	(152)	—
Fair value at December 31, 2016	$ 114	$ —

Note 16. Acquisition of Response Genetics

On October 9, 2015, we acquired substantially all the assets and assumed certain liabilities of Response Genetics, with its principal place of business in California, in a transaction valued at approximately $12.9 million, comprised of $7.5 million in cash and 788,584 shares of the Company's common stock, with the common stock being valued at $5.4 million.
Response Genetics was a life sciences company engaged in the research and development of clinical diagnostic tests for cancer. Response Genetics generated revenues primarily from sales of its ResponseDX® diagnostic tests, which Response Genetics launched in 2008, and by providing clinical trial testing services to pharmaceutical companies.

The transaction is being accounted for using the acquisition method of accounting for business combinations in accordance with GAAP. Under this method, the total consideration transferred to consummate the acquisition is being allocated to the identifiable tangible and intangible assets acquired and liabilities assumed based on their respective fair values as of the closing date of the acquisition. The acquisition method of accounting requires extensive use of estimates and judgments to allocate the consideration transferred to the identifiable tangible and intangible assets acquired and liabilities assumed.

Goodwill arising from the acquisition consists largely of a trained workforce in place and expected synergies from new lines of business. Goodwill recorded in conjunction with the acquisition is deductible for income tax purposes. Business transactions expense of approximately $890,000 incurred in connection with the acquisition was expensed as incurred.

The final allocation of the purchase price of the fair value of the assets acquired and the liabilities assumed as of October 9, 2015 is as follows (in thousands):

	Amount
Accounts receivable	$ 344
Prepaid expenses and other current assets	561
Fixed assets	2,254
Intangible assets	1,246
Goodwill	8,842
Current liabilities	(194)
Obligations under capital lease	(122)
Total purchase price	$ 12,931

The results of operations for the year ended December 31, 2015 include the operations of Response Genetics from October 9, 2015 with revenues of approximately $1,751,000. The net loss of Response Genetics cannot be determined, as its operations were integrated with Cancer Genetics.

Note 17. Contingencies

In the normal course of business, the Company is involved in various claims and legal proceedings. In the opinion of management, the ultimate liability or disposition thereof is not expected to have a material adverse effect on our financial condition, results of operations or liquidity.

Note 18. Joint Venture Agreement

In November 2011, we entered into an affiliation agreement with the Mayo Foundation for Medical Education and Research (“Mayo”), subsequently amended. Under the agreement, we formed a joint venture with Mayo in May 2013 to focus on developing oncology diagnostic services and tests utilizing next generation sequencing. The joint venture is a limited liability company, with each party initially holding fifty percent of the issued and outstanding membership interests of the new entity (the “JV”). In exchange for our membership interest in the JV, we made an initial capital contribution of $1.0 million in October 2013. In addition, we issued 10,000 shares of our common stock to Mayo pursuant to our affiliation agreement and recorded an expense of approximately $175,000. We also recorded additional expense of approximately $231,000 during the fourth quarter of 2013 related to shares issued to Mayo in November of 2011 as the JV achieved certain performance milestones. In the third quarter of 2014 we made an additional $1.0 million capital contribution.

The agreement also requires aggregate total capital contributions by us of up to an additional $4.0 million. The timing of the remaining installments is subject to the JV's achievement of certain operational milestones agreed upon by the board of governors of the JV. In exchange for its membership interest, Mayo’s capital contribution will take the form of cash, staff, services, hardware and software resources, laboratory space and instrumentation, the fair market value of which will be approximately equal to $6.0 million. Mayo’s continued contribution will also be conditioned upon the JV’s achievement of certain milestones.

The joint venture is considered a variable interest entity under ASC 810-10, but we are not the primary beneficiary as we do not have the power to direct the activities of the joint venture that most significantly impact its performance. Our evaluation of ability to impact performance is based on our equal board membership and voting rights and day to day management functions which are performed by the Mayo personnel.

Note 19. Related Party Transactions

John Pappajohn, a member of the Board of Directors and stockholder, had personally guaranteed our revolving line of credit with Wells Fargo Bank through March 31, 2014. As consideration for his guarantee, as well as each of the eight extensions of this facility through March 31, 2014, Mr. Pappajohn received warrants to purchase an aggregate of 1,051,506 shares of common stock of which Mr. Pappajohn assigned warrants to purchase 284,000 shares of common stock to certain third parties. Through December 31, 2016, warrants to purchase 440,113 shares of common stock have been exercised by Mr. Pappajohn and 476,867 warrants to purchase common stock have expired. After adjustment pursuant to the terms of the warrants in conjunction with our IPO, the number of these warrants outstanding retained by Mr. Pappajohn was 108,778 at $15.00 per share on December 31, 2016.

In addition, John Pappajohn also had loaned us an aggregate of $6,750,000 (all of which was converted into 675,000 shares of common stock at the IPO price of $10.00 per share). In connection with these loans, Mr. Pappajohn received warrants to purchase

an aggregate of 202,630 shares of common stock. After adjustment pursuant to the terms of the warrants in conjunction with our IPO, the number of warrants outstanding was 360,785 at $15.00 per share at December 31, 2016.

Effective January 6, 2014, the board of directors appointed John Pappajohn to serve as the Chairman of the Board, a position previously held by Dr. Raju S.K. Chaganti. As compensation for serving as the Chairman of the Board, the Company will pay Mr. Pappajohn $100,000 per year and granted to Mr. Pappajohn 25,000 restricted shares of the Company's common stock, and options to purchase an aggregate of 100,000 shares of the Company's common stock. The options have a term of ten years from the date on which they were granted. The restricted stock and the options each vest in two equal installments on the one year anniversary and the two year anniversary of the date on which Mr. Pappajohn became the Chairman of the Board.

We have a consulting agreement with Equity Dynamics, Inc. (“EDI”), an entity controlled by John Pappajohn, effective April 1, 2014 pursuant to which EDI receives a monthly fee of $10,000. We expensed $120,000 annually for the years ended December 31, 2016 and 2015 related to this agreement. At December 31, 2016 and 2015, we owed EDI $50,000 and $0, respectively.

Pursuant to a consulting and advisory agreement that ended December 31, 2016, Dr. Chaganti received $5,000 per month for providing consulting and technical support services. Total expenses for each of the years ended December 31, 2016 and 2015 were $60,000. Pursuant to the terms of the consulting agreement, Dr. Chaganti received an option to purchase 200,000 shares of our common stock at a purchase price of $15.89 per share vesting over a period of four years. Total non-cash stock-based compensation recognized under this consulting agreement for the years ended December 31, 2016 and 2015 was $37,625 and $239,375, respectively. Also pursuant to the consulting agreement, Dr. Chaganti assigned to us all rights to any inventions which he may invent during the course of rendering consulting services to us. In exchange for this assignment, if the USPTO issues a patent for an invention on which Dr. Chaganti is listed as an inventor, we are required to pay Dr. Chaganti (i) a one-time payment of $50,000 and (ii)1% of any net revenues we receive from any licensed sales of the invention. In February 2015, we paid Dr. Chaganti $150,000, which was recognized as an expense in 2014 when three additional patents were issued.

On November 12, 2015, John Pappajohn, Chairman of the Board and Edward Sitar, our former Chief Financial Officer purchased 100,000 and 5,000, respectively, of shares of common stock with warrants to purchase 100,000 shares of common stock and 5,000 shares of common stock, respectively, in the 2015 Offering described in Note 11.

On May 25, 2016, Mr. Pappajohn purchased 317,820 shares of common stock and warrants to purchase 158,910 shares of common stock in the May Offering described in Note 11.

Note 20. Subsequent Events

On February 22, 2017, we sold $18,177,059 of gross State of New Jersey NOL's and $167,572 of state research and development tax credits, resulting in the receipt of approximately $950,000, net of expenses.

On March 22, 2017, we restructured our debt with SVB, by repaying the outstanding term loan, which was scheduled to mature in May 2017, and entered into a new two year asset-based revolving line of credit agreement. The new SVB credit facility provides for an asset-based line of credit (“ABL”) for an amount not to exceed the lesser of (a) $6.0 million or (b) 80% of eligible accounts receivable plus the lesser of 50% of the net collectable value of third party accounts receivable or three (3) times the average monthly collection amount of third party accounts receivable over the previous quarter. The ABL requires monthly interest payments at the Wall Street Journal prime rate plus 1.5% (5.5% at March 22, 2017) and matures on March 22, 2019. We paid to SVB a $30,000 commitment fee at closing and will pay a fee of 0.25% per year on the average unused portion of the ABL.

We concurrently entered into a new three year $6.0 million term loan agreement (“Term Note”) with Partners for Growth IV, L.P. (“PFG”). The Term Note is an interest only loan with the full principal and any outstanding interest due at maturity on March 22, 2020. Interest is payable monthly at a rate of 11.5% per annum, with the possibility of reducing to 11.0% in 2018 based on achieving certain financial milestones set forth by PFG. We may prepay the Term Note in whole or part at any time without penalty. We paid PFG, a commitment fee of $120,000 at closing.

Both loan agreements require us to comply with certain financial covenants, including minimum adjusted EBITDA and minimum revenue covenants, and restrict us from, among other things, paying cash dividends, incurring debt and entering into certain transactions without the prior consent of the lenders. Repayment of amounts borrowed under the new loan agreements may be accelerated if an event of default occurs, which includes, among other things, a violation of such financial covenants and negative covenants.

Our obligations to SVB under the ABL facility are secured by a first priority security interest on substantially all of our assets, and our obligations under the Term Note to PFG are secured by a second priority security interest subordinated to the SVB lien.

In connection with the Term Note, we issued seven year warrants to the lenders to purchase an aggregate of 443,262 shares of our common stock at an exercise price of $2.82 per share. The number of shares may be reduced by 20% subject to us achieving certain financial milestones set forth by PFG.

Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures.

We evaluated, under the supervision and with the participation of our principal executive officer and principal financial officer, the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities and Exchange Act of 1934 ("Exchange Act"), as amended) as of December 31, 2016, the end of the period covered by this report on Form 10-K. Based on this evaluation, the principal executive officer and the principal financial officer have concluded that our disclosure controls and procedures were effective at December 31, 2016. Disclosure controls and procedures are designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act (i) is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and were operating in an effective manner for the period covered by this report, and (ii) is accumulated and communicated to management, including, the principal executive officer and principal financial officer, or the person performing similar functions as appropriate, to allow timely decisions regarding required disclosures.

Management's Report on Internal Control Over Financial Reporting.

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rule 13a-15(f) and 15d-15(f) under the Securities Exchange Act of 1934.

The Company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles and includes those policies and procedures that:

- Pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company;
- Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the Company are being made only in accordance with authorizations of our management and directors; and
- Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to risk that controls may become inadequate because of changes in conditions or because of declines in the degree of compliance with policies or procedures.

Our management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2016. In making this assessment, our management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in *Internal Control-Integrated Framework (2013)*.

Based on management's assessment, as of December 31, 2016, the Company's internal control over financial reporting was effective.

Changes in Internal Control over Financial Reporting.

There were no changes in our internal control over financial reporting during the three months ended December 31, 2016 that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

Item 9B. Other Information.

Credit Facilities

On March 22, 2017, we restructured our debt with Silicon Valley Bank ("SVB"), by repaying the outstanding term loan, which was scheduled to mature in May 2017, and entered into a new two year asset-based revolving line of credit agreement. The new SVB credit facility provides for an asset-based line of credit ("the ABL") in an amount not to exceed the lesser of (a) $6.0 million or (b) 80% of eligible accounts receivable plus the lesser of 50% of the net collectable value of third party accounts receivable or three (3) times the average monthly collection amount of third party accounts receivable over the previous quarter. The ABL requires monthly interest payments at the Wall Street Journal prime rate plus 1.5% (5.5% at March 22, 2017), an annual commitment fee of 0.25% and matures on March 22, 2019. We paid to SVB a $30,000 commitment fee at closing and will pay a fee of 0.25% per year on the average unused portion of the ABL.

We concurrently entered into a new three year $6.0 million term loan agreement (the "Term Loan") with Partners for Growth IV, L.P. ("PFG"). The Term Loan is an interest only loan with the full principal and any outstanding interest due at maturity on March 22, 2020. Interest is payable monthly at a rate of 11.5% per annum, with the possibility of reducing to 11.0% in 2018 based on achieving certain financial milestones set forth by PFG. We may prepay the Term Loan in whole or part at any time without penalty. We paid PFG, a commitment fee of $120,000 at closing.

Both loan agreements require us to comply with certain financial covenants, including minimum adjusted EBITDA and minimum revenue covenants, and restrict us from, among other things, paying cash dividends, incurring debt and entering into certain transactions without the prior consent of the lenders. Repayment of amounts borrowed under the new loan agreements may be accelerated if an event of default occurs, which includes, among other things, a violation of such financial covenants and negative covenants.

Our obligations to SVB under the ABL facility are secured by a first priority security interest on substantially all of our assets, and our obligations under the Term Loan to PFG are secured by a second priority security interest subordinated to the SVB lien.

In connection with such term loan, we issued seven year warrants to the lenders to purchase an aggregate of 443,262 shares of our common stock at an exercise price of $2.82 per share. The number of shares may be reduced by 20% subject to us achieving certain financial milestones set forth by PFG. The issuance of the warrants and the underlying warrant shares will be exempt from registration under Section 4(a)(2) of the Securities Act or 1933.

The above description of the terms of the loan agreements and the warrant is qualified in its entirety by the full text of the loan agreements and warrant, which are being filed as Exhibits 10.81, 10.82 and 10.83 to this Annual Report on Form 10-K and incorporated herein.

Dr. Shaknovich

Dr. Rita Shaknovich, our Medical Director and Vice President of Hematopathology Services since 2015, will change her status with the Company effective Monday March 27, 2017 from a full time employee to a part-time, independent consultant, so that she can return to academic research. As a part-time consultant, she will continue to serve as our Group Medical Director, an executive officer position, and as the co-chair of our Clinical Advisory Board. Dr. Shaknovich's employment agreement will be terminated by mutual consent without severance, and as a consultant she will be compensated on an hourly basis for her services to the Company.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The information required by this item will be contained in the Proxy Statement for our 2017 Annual Meeting of Stockholders, which we anticipate will be filed no later than 120 days after the end of our fiscal year ended December 31, 2016 and is incorporated herein by reference herein.

Item 11. Executive Compensation.

The information required by this item will be contained in the Proxy Statement for our 2017 Annual Meeting of Stockholders, which we anticipate will be filed no later than 120 days after the end of our fiscal year ended December 31, 2016 and is incorporated by reference herein.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The information required by this item will be contained in the Proxy Statement for our 2017 Annual Meeting of Stockholders, which we anticipate will be filed no later than 120 days after the end of our fiscal year ended December 31, 2016 and is incorporated by reference herein.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

The information required by this item will be contained in the Proxy Statement for our 2017 Annual Meeting of Stockholders, which we anticipate will be filed no later than 120 days after the end of our fiscal year ended December 31, 2016 and is incorporated by reference herein.

Item 14. Principal Accounting Fees and Services.

The information required by this item will be contained in the Proxy Statement for our 2017 Annual Meeting of Stockholders, which we anticipate will be filed no later than 120 days after the end of our fiscal year ended December 31, 2016 and is incorporated by reference herein.

PART IV

Item 15. Exhibits, Financial Statement Schedules.

(a)(1) *Financial Statements*. The financial statements filed as part of this report are listed on the Index to the Consolidated Financial Statements.

(a)(2) *Financial Statement Schedules*. Schedules are omitted because they are not applicable or the required information is shown in the consolidated financial statements or notes thereto.

(a)(3) *Exhibits.* Reference is made to the Exhibit Index. The exhibits are included, or incorporated by reference, in this annual report on Form 10-K and are numbered in accordance with Item 601 of Regulation S-K.

Item 16. Form 10-K Summary.

None.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Cancer Genetics, Inc.
(Registrant)

Date: March 23, 2017

/s/ Panna L. Sharma
Panna L. Sharma
President and Chief Executive Officer
(Principal Executive Officer and duly authorized signatory)

Date: March 23, 2017

/s/ John A. Roberts
John A. Roberts
Chief Operating Officer and Executive Vice President, Finance
(Principal Financial Officer)

Date: March 23, 2017

/s/ Igor Gitelman
Igor Gitelman
Chief Accounting Officer
(Principal Accounting Officer)

SIGNATURES AND POWER OF ATTORNEY

KNOW ALL BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Panna Sharma and John A. Roberts, and each of them, his true and lawful agent, proxy and attorney-in-fact, with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to (i) act on, sign and file with the Securities and Exchange Commission any and all amendments to this annual report on Form 10-K together with all schedules and exhibits thereto, (ii) act on, sign and file such certificates, instruments, agreements and other documents as may be necessary or appropriate in connection therewith and, (iii) take any and all actions which may be necessary or appropriate to be done, as fully for all intents and purposes as he might or could do in person, hereby approving, ratifying and confirming all that such agent, proxy and attorney-in-fact or any of his substitutes may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Act, this annual report on Form 10-K has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Panna L. Sharma Panna L. Sharma	President, Chief Executive Officer and Director *(Principal Executive Officer)*	March 23, 2017
/s/ John A. Roberts John A. Roberts	Chief Operating Officer and Executive Vice President, Finance *(Principal Financial Officer)*	March 23, 2017
/s/ Igor Gitelman Igor Gitelman	Chief Accounting Officer *(Principal Accounting Officer)*	March 23, 2017
/s/ John Pappajohn John Pappajohn	Chairman of the Board of Directors	March 23, 2017
/s/ Geoffrey Harris Geoffrey Harris	Director	March 23, 2017
/s/ Edmund Cannon Edmund Cannon	Director	March 23, 2017
/s/ Howard McLeod Howard McLeod	Director	March 23, 2017
/s/ Michael J. Welsh Michael J. Welsh	Director	March 23, 2017
/s/ Raju S. K. Chaganti Raju S. K. Chaganti, Ph.D.	Director	March 23, 2017
/s/ Franklyn G. Prendergast Franklyn G. Prendergast, M.D., Ph.D.	Director	March 23, 2017

INDEX TO EXHIBITS

Exhibit No.	Description
3.1	Third Amended and Restated Certificate of Incorporation of Cancer Genetics, Inc., filed as Exhibit 3.1 to quarterly report on Form 10-Q filed on May 15, 2013 and incorporated herein by reference.
3.2	Amended and Restated Bylaws of Cancer Genetics, Inc., filed as Exhibit 3.4 to Form S-1/A filed on April 30, 2012 (File No. 333-178836) and incorporated herein by reference.
4.1	Specimen Common Stock certificate of Cancer Genetics, Inc., filed as Exhibit 4.1 to Form S-1/A filed on May 16, 2012 (File No. 333-178836) and incorporated herein by reference.
4.2	Form of Short Form Cashless Exercise Warrant, filed as Exhibit 4.9 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
4.3	Form of Medium Form Warrant, filed as Exhibit 4.10 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
4.4	Form of Long Form Warrant, filed as Exhibit 4.11 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
4.5	Form of Bridge Financing Warrant issued by Cancer Genetics, Inc. to John Pappajohn, NNJCA Capital, LLC, Pecora and Company and DAM Holdings, LLC, filed as Exhibit 10.36 to Form S-1/A filed on March 13, 2012 (File No. 333-178836) and incorporated herein by reference.
4.6	Form of Modified Bridge Warrant issued by Cancer Genetics, Inc. to John Pappajohn and Mark Oman, filed as Exhibit 10.50 to Form S-1/A filed on October 23, 2012 (File No. 333-178836) and incorporated herein by reference.
4.7	Form of October 2012 Warrant issued by Cancer Genetics, Inc. to John Pappajohn and Mark Oman, filed as Exhibit 10.53 to Form S-1/A filed on October 23, 2012 (File No. 333-178836) and incorporated herein by reference.
4.8	Asset Purchase Agreement, by and among Cancer Genetics, Inc., Gentris, LLC and Gentris Corporation, dated July 15, 2014 (incorporated by reference to Exhibit 4.1 of the Company's current report on Form 8-K filed on July 22, 2014 with the Securities and Exchange Commission).
4.9	Share Purchase Agreement, by and among Cancer Genetics (India) Private Limited, Cancer Genetics, Inc., BioServe Biotechnologies (India) Pvt. Ltd., BioServe Biotechnologies Ltd., and each of the Selling Shareholders named therein, dated May 12, 2014 (incorporated by reference to Exhibit 4.1 of the Company's current report on Form 8-K filed on August 18, 2014 with the Securities and Exchange Commission).
4.10	Stock Purchase Agreement, by and between Cancer Genetics, Inc. and BioServe Biotechnologies Ltd., dated May 12, 2014 (incorporated by reference to Exhibit 4.2 of the Company's current report on Form 8-K filed on August 18, 2014 with the Securities and Exchange Commission).
4.11	Form of Warrant Agreement of Cancer Genetics, Inc. (incorporated by reference to Exhibit 4.1 of the Company's current report on Form 8-K, filed with the Securities and Exchange Commission on May 20, 2016).
4.12	Form of Warrant Agreement of Cancer Genetics, Inc. (incorporated by reference to Exhibit 4.1 to the Company's current report on Form 8-K, filed with the Securities and Exchange Commission on September 9, 2016).
10.1	Amended and Restated 2008 Stock Option Plan, filed as Exhibit 10.1 to Form S-1/A filed on October 23, 2012 (File No. 333-178836) and incorporated herein by reference.
10.2	Form of Notice of Stock Option Grant under 2008 Stock Option Plan, filed as Exhibit 10.2 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.3	Form of Stock Option Grant Agreement under 2008 Stock Option Plan, filed as Exhibit 10.3 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.4	Form of Exercise Notice and Restricted Stock Purchase Agreement under 2008 Stock Option Plan, filed as Exhibit 10.4 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.5	Amended and Restated 2011 Equity Compensation Plan, dated May 22, 2014 (incorporated by reference to Exhibit 10.1 to the Company's current report on Form 8-K filed on May 22, 2014 with the Securities and Exchange Commission)
10.6	Form of Stock Option Grant Agreement under 2011 Stock Option Plan, filed as Exhibit 10.6 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.7	Form of Indemnification Agreement, filed as Exhibit 10.7 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.

Exhibit No.	Description
10.8	Medical Director Agreement, between Cancer Genetics, Inc. and Lan Wang, M.D., dated October 9, 2009, filed as Exhibit 10.9 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.9	Consulting Agreement, between Cancer Genetics, Inc. and R.S.K. Chaganti, dated September 15, 2010, filed as Exhibit 10.15 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.10	Employment Agreement, between Panna Sharma and Cancer Genetics, Inc., effective as of April 1, 2010, filed as Exhibit 10.17 to Form S-1/A filed on February 14, 2012 (File No. 333-178836) and incorporated herein by reference.
10.11	Employment Agreement, between Jane Houldsworth El Naggar, Ph.D. and Cancer Genetics, Inc., effective as of January 1, 2012, filed as Exhibit 10.19 to Form S-1/A filed on February 14, 2012 (File No. 333-178836) and incorporated herein by reference.
10.12	Office Lease Agreement, between Cancer Genetics, Inc. and Onyx Equities, LLC, dated October 9, 2007, filed as Exhibit 10.20 to Form S-1/A filed on April 23, 2012 (File No. 333-178836) and incorporated herein by reference.
10.13	Credit Agreement, between Cancer Genetics, Inc. and Wells Fargo Bank, N.A., dated April 29, 2008, filed as Exhibit 10.21 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.14	Security Agreement, between Cancer Genetics, Inc. and Wells Fargo Bank, N.A., dated April 29, 2008, filed as Exhibit 10.22 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.15	First Addendum to Credit Agreement, between Cancer Genetics, Inc. and Wells Fargo Bank, N.A., dated July 7, 2008, filed as Exhibit 10.23 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.16	Second Addendum to Credit Agreement, between Cancer Genetics, Inc. and Wells Fargo Bank, N.A., dated March 30, 2009, filed as Exhibit 10.24 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.17	Third Addendum to Credit Agreement, between Cancer Genetics, Inc. and Wells Fargo Bank, N.A., dated July 2, 2009, filed as Exhibit 10.25 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference
10.18	Fourth Addendum to Credit Agreement, between Cancer Genetics, Inc. and Wells Fargo Bank, N.A., dated October 21, 2009, filed as Exhibit 10.26 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.19	Fifth Addendum to Credit Agreement, between Cancer Genetics, Inc. and Wells Fargo Bank, N.A., dated July 29, 2010, filed as Exhibit 10.27 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.20	Credit Agreement, between Cancer Genetics, Inc. and DAM Holdings, LLC, dated March 23, 2011, filed as Exhibit 10.28 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.21	Inter-creditor Agreement, between Cancer Genetics, Inc., John Pappajohn and DAM Holdings, LLC, dated March 23, 2011, filed as Exhibit 10.29 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.22	General Business Security Agreement, between Cancer Genetics, Inc. and DAM Holdings, LLC, dated March 23, 2011, filed as Exhibit 10.30 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.23	Promissory Note, issued by Cancer Genetics, Inc. to DAM Holdings, LLC, dated March 23, 2011, filed as Exhibit 10.31 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.24	Sixth Addendum to Credit Agreement, between Cancer Genetics, Inc. and Wells Fargo Bank, N.A., dated June 6, 2011, filed as Exhibit 10.32 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.25	Amended and Restated Credit Agreement, by and among Cancer Genetics, Inc., John Pappajohn, Pecora and Company and NNJCA Capital, LLC dated February 13, 2012, filed as Exhibit 10.33 to Form S-1/A filed on March 13, 2012 (File No. 333-178836) and incorporated herein by reference.

Exhibit No.	Description
10.26	Form of Promissory Note issued by Cancer Genetics, Inc. to John Pappajohn, filed as Exhibit 10.34 to Form S-1/A filed on March 13, 2012 (File No. 333-178836) and incorporated herein by reference.
10.27	Form of Promissory Note issued by Cancer Genetics, Inc. to NNJCA Capital, LLC and Pecora and Company, filed as Exhibit 10.35 to Form S-1/A filed on March 13, 2012 (File No. 333-178836) and incorporated herein by reference.
10.28	Inter-Creditor Agreement, between Cancer Genetics, Inc., John Pappajohn, DAM Holdings, LLC, Pecora and Company, NNJCA Capital, LLC and Equity Dynamics, Inc., dated February 13, 2012, filed as Exhibit 10.37 to Form S-1/A filed on March 13, 2012 (File No. 333-178836) and incorporated herein by reference.
10.29	Seventh Addendum to Credit Agreement, between Cancer Genetics, Inc. and Wells Fargo Bank, N.A., dated February 15, 2012, filed as Exhibit 10.38 to Form S-1/A filed on March 13, 2012 (File No. 333-178836) and incorporated herein by reference.
10.30	Amendment to Credit Agreement, between Cancer Genetics, Inc. and DAM Holdings, LLC, dated March 9, 2012, filed as Exhibit 10.33 to Form S-1/A filed on March 13, 2012 (File No. 333-178836) and incorporated herein by reference.
10.31	Affiliation Agreement, between Cancer Genetics, Inc. and Mayo Foundation for Medical Education and Research dated November 7, 2011, filed as Exhibit 10.35 to Form S-1 filed on December 30, 2011 (File No. 333-178836) and incorporated herein by reference.
10.32	Consulting Agreement with Equity Dynamics, Inc., filed as Exhibit 10.38 to Form S-1/A filed on February 14, 2012 (File No. 333-178836) and incorporated herein by reference.
10.33	Letter Agreement, between Meadows Office, L.L.C. and Cancer Genetics, Inc., dated January 10, 2008, filed as Exhibit 10.44 to Form S-1/A filed on April 23, 2012 (File No. 333-178836) and incorporated herein by reference.
10.34	Letter of Credit from JPMorgan Chase Bank, N.A., dated April 19, 2012, filed as Exhibit 10.46 to Form S-1/A filed on April 30, 2012 (File No. 333-178836) and incorporated herein by reference.
10.35	Letter Agreement between Cancer Genetics, Inc. and John Pappajohn, filed as Exhibit 10.47 to Form S-1/A filed on May 7, 2012 (File No. 333-178836) and incorporated herein by reference.
10.36	Amendment No. 1 to Affiliation Agreement, between Cancer Genetics, Inc. and Mayo Foundation for Medical Education and Research, dated September 29, 2012, filed as Exhibit 10.49 to Form S-1/A filed on October 23, 2012 (File No. 333-178836) and incorporated herein by reference.
10.37	Restated Credit Agreement, between Mark Oman and John Pappajohn and Cancer Genetics, Inc., dated October 17, 2012, filed as Exhibit 10.51 to Form S-1/A filed on October 23, 2012 (File No. 333-178836) and incorporated herein by reference.
10.38	Form of Restated Promissory Note issued by Cancer Genetics, Inc. to John Pappajohn and Mark Oman, filed as Exhibit 10.52 to Form S-1/A filed on October 23, 2012 (File No. 333-178836) and incorporated herein by reference.
10.39	Restated Registration Rights Agreement, between Cancer Genetics, Inc., Mark Oman and John Pappajohn, dated October 17, 2012, filed as Exhibit 10.54 to Form S-1/A filed on October 23, 2012 (File No. 333-178836) and incorporated herein by reference.
10.40	Letter Agreement between Cancer Genetics, Inc. and Pecora, filed as Exhibit 10.55 to Form S-1/A filed on October 23, 2012 (File No. 333-178836) and incorporated herein by reference.
10.41	Letter Agreement between Cancer Genetics, Inc. and NNJCA Capital, LLC, filed as Exhibit 10.56 to Form S-1/A filed on October 23, 2012 (File No. 333-178836) and incorporated herein by reference.
10.42	Letter Agreement between Cancer Genetics, Inc. and DAM Holdings, Inc., filed as Exhibit 10.57 to Form S-1/A filed on October 23, 2012 (File No. 333-178836) and incorporated herein by reference.
10.43	Eighth Addendum to Credit Agreement, between Cancer Genetics, Inc. and Wells Fargo Bank, N.A., dated October 18, 2012, filed as Exhibit 10.58 to Form S-1/A filed on November 16, 2012 (File No. 333-178836) and incorporated herein by reference.
10.44	Credit Agreement between John Pappajohn and Cancer Genetics, Inc. dated December 4, 2012, filed as Exhibit 10.59 to Form S-1/A filed on December 14, 2012 (File No. 333-178836) and incorporated herein by reference.

Exhibit No.	Description
10.45	Promissory Note issued by Cancer Genetics, Inc. to John Pappajohn dated December 4, 2012, filed as Exhibit 10.60 to Form S-1/A filed on December 14, 2012 (File No. 333-178836) and incorporated herein by reference.
10.46	Amendment No. 2 to Affiliation Agreement between Cancer Genetics, Inc. and Mayo Foundation for Medical Education and Research, dated January 4, 2013, filed as Exhibit 10.61 to Form S-1/A filed on January 8, 2013 (File No. 333-178836) and incorporated herein by reference.
10.47	Letter Agreement between Cancer Genetics, Inc. and John Pappajohn dated February 11, 2013, filed as Exhibit 10.63 to Form S-1/A filed on February 12, 2013 (File No. 333-178836) and incorporated herein by reference.
10.48	Letter Agreement between Cancer Genetics, Inc. and John Pappajohn (on behalf of his spouse) dated February 13, 2013, filed as Exhibit 10.64 to Form S-1/A filed on February 14, 2013 (File No. 333-178836) and incorporated herein by reference.
10.49	Letter Agreement between Cancer Genetics, Inc. and NNJCA Capital, LLC dated as of February 13, 2013, filed as Exhibit 10.65 to Form S-1/A filed on February 14, 2013 (File No. 333-178836) and incorporated herein by reference.
10.50	Letter Agreement between Cancer Genetics, Inc. and DAM Holdings, LLC dated February 13, 2013, filed as Exhibit 10.66 to Form S-1/A filed on February 14, 2013 (File No. 333-178836) and incorporated herein by reference.
10.51	Letter Agreement between Cancer Genetics, Inc. and R.S.K. Chaganti, dated February 13, 2013, filed as Exhibit 10.67 to Form S-1/A filed on March 4, 2013 (File No. 333-178836) and incorporated herein by reference.
10.52	Form of Letter Agreement between Cancer Genetics, Inc. and certain warrant holders waiving certain anti-dilution rights, filed as Exhibit 10.68 to Form S-1/A filed on March 4, 2013 (File No. 333-178836) and incorporated herein by reference.
10.53	Letter Amendment dated March 20, 2013 to Letter Agreement, between Meadows Office, L.L.C. and Cancer Genetics, Inc., dated April 6, 2012, filed as Exhibit 10.72 to Form S-1/A filed on March 22, 2013 (File No. 333-178836) and incorporated herein by reference.
10.54	Amendment No. 3 to Affiliation Agreement between the Company and Mayo Foundation for Medical Education and Research, dated May 21, 2013, filed as Exhibit 10.73 to Form S-1 filed on June 5, 2013 (File No. 333-189117) and incorporated herein by reference.
10.55	Limited Liability Company Agreement of OncoSpire Genomics, LLC, dated May 21, 2013, filed as Exhibit 10.74 to Form S-1/A filed on July 12, 2013 (File No. 333-189117) and incorporated herein by reference.
10.56	Joint Development Intellectual Property Agreement, among the Company, Mayo Foundation for Medical Education and Research and OncoSpire Genomics, LLC, dated May 21, 2013, filed as Exhibit 10.75 to Form S-1/A filed on July 12, 2013 (File No. 333-189117) and incorporated herein by reference.
10.57	Letter Agreement, between Cancer Genetics, Inc. and Andrew L. Pecora, effective February 18, 2014 (incorporated by reference to Exhibit 10.66 of the Company's Annual Report on Form 10-K for the year ended December 31, 2013).
10.58	Consulting Agreement, between Cancer Genetics, Inc. and R.S.K. Chaganti, dated February 19, 2014 (incorporated by reference to Exhibit 10.67 of the Company's Annual Report on Form 10-k for the year ended December 31, 2013).
10.59	Employment Agreement, between Cancer Genetics, Inc. and Edward J. Sitar, dated March 17, 2014 (incorporated by reference to Exhibit 10.69 of the Company's Annual Report on Form 10-K for the year ended December 31, 2013).
10.60	Credit Agreement, between Cancer Genetics, Inc. and Wells Fargo Bank, N.A., dated April 1, 2014 (incorporated by reference to Exhibit 10.1 of the Company’s current report on Form 8-K filed on April 4, 2014 with the Securities and Exchange Commission).
10.61	Revolving Line of Credit Note, between Cancer Genetics, Inc. and Wells Fargo Bank, N.A., dated April 1, 2014 (incorporated by reference to Exhibit 10.2 of the Company’s current report on Form 8-K filed on April 4, 2014 with the Securities and Exchange Commission).
10.62	Consulting Agreement, between Cancer Genetics Inc. and Equity Dynamics, dated November 6, 2014 and effective as of April 1, 2014 (incorporated by reference to Exhibit 10.4 of the Company’s quarterly report on Form 10-Q for the period ended September 30, 2014 with the Securities and Exchange Commission).

Exhibit No.	Description
10.63	Security Agreement, between Cancer Genetics, Inc. and Wells Fargo Bank, N.A., dated November 12, 2014 (incorporated by reference to Exhibit 10.5 of the Company's quarterly report on Form 10-Q for the period ended September 30, 2014 with the Securities and Exchange Commission).
10.64	First Amendment to Credit Agreement, between Cancer Genetics, Inc. and Wells Fargo Bank, N.A., dated November 12, 2014. (incorporated by reference to Exhibit 10.6 of the Company's quarterly report on Form 10-Q for the period ended September 30, 2014 with the Securities and Exchange Commission).
10.65	Loan and Security Agreement, between Cancer Genetics, Inc. and Silicon Valley Bank, dated May 7, 2015.(incorporated by reference to Exhibit 10.1 of the Company's quarterly report on Form 10-Q for the period ended March 31, 2015 with the Securities and Exchange Commission).
10.66	Amended and Restated Asset Purchase Agreement By and Between Response Genetics, Inc. a Delaware Corporation, and Cancer Genetics., a Delaware Corporation, dated as of August 14, 2015 (incorporated by reference to the Company's current report on Form 8-K filed on August 21, 2015).
10.67	2011 Equity Incentive Plan, as amended and restated effective May 14, 2015, filed as Exhibit 10.1 to Form S-8 filed on July 28, 2015 (File Number 333-205903) and incorporated herein by reference.
10.68	Employment Agreement between Dr. Shaknovich and Cancer Genetics, Inc., effective as of July 1, 2015.(incorporated by reference to the Company's current report on Form 8-K filed on July 7, 2015).
10.69	Controlled Equity Offering℠ Sales Agreement, dated July 15, 2015, by and between Cancer Genetics, Inc. and Cantor Fitzgerald & Co. (incorporated by reference to the Company's current report on Form 8-K filed on July 16, 2015).
10.70	Form of Warrant Agreement of Cancer Genetics, Inc. (corrected) (incorporated by reference to Exhibit 4.1 of the Company's quarterly report on Form 10-Q for the period ended September 30, 2015 with the Securities and Exchange Commission).
10.71	Office Lease, between Response Genetics, Inc. and Health Research Association, dated September 16, 2014 (incorporated by reference to the Company's annual report on Form 10-K for the year ended December 31, 2015 with the Securities and Exchange Commission).
10.72	Tenth Amendment to Office Lease, between Response Genetics, Inc. and University of Southern California, dated June 30, 2015 (incorporated by reference to the Company's annual report on Form 10-K for the year ended December 31, 2015 with the Securities and Exchange Commission).
10.73	Consent and First Amendment to Loan and Security Agreement, between Cancer Genetics, Inc. and Silicon Valley Bank, dated January 28, 2016 (incorporated by reference to Exhibit 10.73 to the Company's annual report on Form 10-K for the year ended December 31, 2015, filed on March 10, 2016).
10.74	Form of Securities Purchase Agreement, dated May 19, 2016, by and between Cancer Genetics, Inc. and various purchasers named therein (incorporated by reference to Exhibit 10.1 to the Company's current report on Form 8-K filed with the Securities and Exchange Commission on May 20, 2016).
10.75	Engagement Letter between Cancer Genetics, Inc. and Rothman & Renshaw, a unit of H.C. Wainwright & Co., LLC, dated as of May 19, 2016 (incorporated by reference to Exhibit 10.2 to the Company's current report on Form 8-K filed with the Securities and Exchange Commission on May 20, 2016).
10.76	Eleventh Amendment to Lease Agreement, dated June 10, 2016, between University of Southern California and Cancer Genetics, Inc. (incorporated by reference to Exhibit 10.1 of the Company's quarterly report on Form 10-Q for the period ended June 30, 2016).
10.77	Employment Agreement of John Roberts, dated June 27, 2016 (incorporated by reference to Exhibit 10.1 of the Company's current report on Form 8-K filed on June 30, 2016).
10.78	Form of Securities Purchase Agreement, dated September 8, 2016, by and between Cancer Genetics, Inc. and various purchasers named therein (incorporated by reference to Exhibit 10.1 to the Company's current report on Form 8-K filed with the Securities and Exchange Commission on September 9, 2016).
10.79	Engagement Letter between Cancer Genetics, Inc. and Rothman & Renshaw, a unit of H.C. Wainwright & Co., LLC, dated as of September 8, 2016 (incorporated by reference to Exhibit 10.2 to the Company's current report on Form 8-K filed with the Securities and Exchange Commission on September 9, 2016).
10.80	Amendment, dated as of October 11, 2016, to Amended and Restated Cancer Genetics, Inc. 2011 Equity Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's current report on Form 8-K, filed with the Securities and Exchange Commission on October 12, 2016).

10.81*	Amended and restated loan and security agreement with Silicon Valley Bank dated as of March 22, 2017.
10.82*	Loan and security agreement with Partners for Growth IV, L.P. dated as of March 22, 2017.
10.83*	Form of Warrant issued to lenders dated March 22, 2017.
10.84*	Release, dated February 3, 2017, between Edward Sitar and Cancer Genetics, Inc.
21.1*	Subsidiaries of Cancer Genetics, Inc.
23.1*	Consent of RSM US LLP.
24.1	Power of attorney (included on the signature page).
31.1*	Certification of Principal Executive Officer pursuant to Rules 13a-14(a) and 15d-14(a) promulgated under the Securities and Exchange Act of 1934, as amended.
31.2*	Certification of Principal Financial Officer pursuant to Rules 13a-14(a) and 15d-14(a) promulgated under the Securities and Exchange Act of 1934, as amended.
32.1**	Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2**	Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101*	The following financial statements from this annual report on Form 10-K of Cancer Genetics, Inc. for the year-ended December 31, 2016, filed on March 23, 2017, formatted in XBRL (eXtensible Business Reporting Language): (i) the Consolidated Balance Sheets, (ii) the Consolidated Statements of Operations, (iii) the Consolidated Statements of Cash Flows, (iv) the Consolidated Statements of Stockholders' Equity and (v) the Notes to the Consolidated Financial Statements.

* Filed herewith.
** Furnished herewith.

AMENDED AND RESTATED LOAN AND SECURITY AGREEMENT

THIS AMENDED AND RESTATED LOAN AND SECURITY AGREEMENT (this "**Agreement**") dated as of March 22, 2017 (the "**Effective Date**") by and among (a) **SILICON VALLEY BANK** , a California corporation ("**Bank**"), and (b) (i) **CANCER GENETICS, INC.**, a Delaware corporation ("**Parent**") and (ii) **GENTRIS, LLC**, a Delaware limited liability company ("**Delaware Subsidiary**"; and together with Parent, individually and collectively, jointly and severally, "**Borrower**"), provides the terms on which Bank shall lend to Borrower and Borrower shall repay Bank. This Agreement amends and restates in its entirety, and replaces, the terms of (and obligations outstanding under) that certain Loan and Security Agreement among Borrower and Bank dated as of May 7, 2015, as amended by that certain Consent and First Amendment to Loan and Security Agreement between Borrower and Bank dated as of February 9, 2016, and as further amended by that certain Waiver and Second Amendment to Loan and Security Agreement between Borrower and Bank dated as of August 23, 2016 (as amended, the "**Prior Loan Agreement**"). In addition to the terms set forth herein, this Agreement shall only be effective upon the payment in full of all Obligations with respect to the "Term Loan Advance" (as defined in the Prior Loan Agreement) in accordance with the terms of the PFG Loan Agreement. The parties agree that the Prior Loan Agreement is hereby superseded and replaced in its entirety by this Agreement, and the parties agree as follows:

1 ACCOUNTING AND OTHER TERMS

Accounting terms not defined in this Agreement shall be construed following GAAP. Calculations and determinations must be made following GAAP. Capitalized terms not otherwise defined in this Agreement shall have the meanings set forth in Section 13. All other terms contained in this Agreement, unless otherwise indicated, shall have the meaning provided by the Code to the extent such terms are defined therein.

2 LOAN AND TERMS OF PAYMENT

2.1 Promise to Pay. Borrower hereby unconditionally promises to pay Bank the outstanding principal amount of all Credit Extensions and accrued and unpaid interest thereon as and when due in accordance with this Agreement.

2.2 Revolving Line.

(a) Availability. Subject to the terms and conditions of this Agreement and to deduction of Reserves, Bank may, in its good faith business discretion, make Advances not exceeding the Availability Amount. Amounts borrowed under the Revolving Line may be repaid and, prior to the Revolving Line Maturity Date, reborrowed, subject to the applicable terms and conditions precedent herein.

(b) Termination; Repayment. The Revolving Line terminates on the Revolving Line Maturity Date, when the principal amount of all Advances, the unpaid interest thereon, and all other Obligations relating to the Revolving Line shall be immediately due and payable.

2.3 Overadvances. If, at any time, the outstanding principal amount of any Advances exceeds the lesser of either the Revolving Line or the Borrowing Base, Borrower shall immediately pay to Bank in cash the amount of such excess (such excess, the "**Overadvance**"). Without limiting Borrower's obligation to repay Bank any Overadvance, Borrower agrees to pay Bank interest on the outstanding amount of any Overadvance, on demand, at a per annum rate equal to the rate that is otherwise applicable to Advances plus four percent (4.0%).

2.4 Payment of Interest on the Credit Extensions.

(a) Interest Rate. Subject to Section 2.4(b), the principal amount outstanding under the Revolving Line shall accrue interest at a floating per annum rate equal to one and one-half of one percent (1.50%) above the Prime Rate, which interest shall be payable monthly in accordance with Section 2.4(d) below.

(b) Default Rate. Immediately upon the occurrence and during the continuance of an Event of Default, Obligations shall bear interest at a rate per annum which is four percent (4.0%) above the rate that is otherwise applicable thereto (the "**Default Rate**"). Fees and expenses which are required to be paid by Borrower pursuant to the Loan Documents (including, without limitation, Bank Expenses) but are not paid when due shall bear interest until paid at a rate equal to the highest rate applicable to the Obligations. Payment or acceptance of the increased interest rate provided in this Section 2.4(b) is not a permitted alternative to timely payment and shall not constitute a waiver of any Event of Default or otherwise prejudice or limit any rights or remedies of Bank.

(c) Adjustment to Interest Rate. Changes to the interest rate of any Credit Extension based on changes to the Prime Rate shall be effective on the effective date of any change to the Prime Rate and to the extent of any such change.

(d) Payment; Interest Computation. Interest is payable monthly on the Payment Date of each month and shall be computed on the basis of a 360-day year for the actual number of days elapsed. In computing interest, (i) all payments received after 2:00 p.m. Eastern time on any day shall be deemed received at the opening of business on the next Business Day, and (ii) the date of the making of any Credit Extension shall be included and the date of payment shall be excluded; provided, however, that if any Credit Extension is repaid on the same day on which it is made, such day shall be included in computing interest on such Credit Extension.

2.5 Fees. Borrower shall pay to Bank:

(a) Revolving Line Commitment Fee. A fully earned, non-refundable commitment fee of Thirty Thousand Dollars ($30,000.00), on the Effective Date;

(b) Anniversary Fee. A fully earned, non-refundable anniversary fee of Thirty Thousand Dollars ($30,000.00) (the "**Anniversary Fee**") is earned as of the Effective Date and is due and payable on the earlier to occur of (i) the one (1) year anniversary of the Effective Date, (ii) the termination of this Agreement, or (iii) the occurrence of an Event of Default;

(c) Unused Revolving Line Facility Fee. Payable quarterly in arrears on the last day of each calendar quarter occurring thereafter prior to the Revolving Line Maturity Date, and on the Revolving Line Maturity Date, a fee (the "**Unused Revolving Line Facility Fee**") in an amount equal to one-quarter of one percent (0.25%) per annum of the average unused portion of the Revolving Line, computed on the basis of a year with the applicable number of days as set forth in Section 2.4(d). The unused portion of the Revolving Line, for purposes of this calculation, shall be calculated on a calendar year basis and shall equal the difference between (i) the Revolving Line, and (ii) the average for the period of the daily closing balance of the Revolving Line outstanding; and

(d) Bank Expenses. All Bank Expenses (including reasonable attorneys' fees and expenses for documentation and negotiation of this Agreement) incurred through and after the Effective Date, when due (or, if no stated due date, upon demand by Bank).

Unless otherwise provided in this Agreement or in a separate writing by Bank, Borrower shall not be entitled to any credit, rebate, or repayment of any fees earned by Bank pursuant to this Agreement notwithstanding any termination of this Agreement or the suspension or termination of Bank's obligation to make loans and advances hereunder. Bank may deduct amounts owing by Borrower under the clauses of this Section 2.5 pursuant to the terms of Section 2.6(c). Bank shall provide Borrower written notice of deductions made from the Designated Deposit Account pursuant to the terms of the clauses of this Section 2.5.

2.6 Payments; Application of Payments; Debit of Accounts.

(a) All payments to be made by Borrower under any Loan Document shall be made in immediately available funds in Dollars, without setoff or counterclaim, before 2:00 p.m. Eastern time on the date when due. Payments of principal and/or interest received after 2:00 p.m. Eastern time are considered received at the opening of business on the next Business Day. When a payment is due on a day that is not a Business Day, the payment shall be due the next Business Day, and additional fees or interest, as applicable, shall continue to accrue until paid.

(b) Bank has the exclusive right to determine the order and manner in which all payments with respect to the Obligations may be applied. Borrower shall have no right to specify the order or the accounts to which Bank shall allocate or apply any payments required to be made by Borrower to Bank or otherwise received by Bank under this Agreement when any such allocation or application is not specified elsewhere in this Agreement.

(c) Bank may debit any of Borrower's deposit accounts, including the Designated Deposit Account, for principal and interest payments or any other amounts Borrower owes Bank when due. These debits shall not constitute a set-off.

2.7 Withholding. Payments received by Bank from Borrower under this Agreement will be made free and clear of and without deduction for any and all present or future taxes, levies, imposts, duties, deductions, withholdings, assessments, fees or other charges imposed by any Governmental Authority (including any interest, additions to tax or penalties applicable thereto). Specifically, however, if at any time any Governmental Authority, applicable law, regulation or international agreement requires Borrower to make any withholding or deduction from any such payment or other sum payable hereunder to Bank, Borrower hereby covenants and agrees that the amount due from Borrower with respect to such payment or other sum payable hereunder will be increased to the extent necessary to ensure that, after the making of such required withholding or deduction, Bank receives a net sum equal to the sum which it would have received had no withholding or deduction been required, and Borrower shall pay the full amount withheld or deducted to the relevant Governmental Authority. Borrower will, upon request, furnish Bank with proof reasonably satisfactory to Bank indicating that Borrower has made such withholding payment; provided, however, that Borrower need not make any withholding payment if the amount or validity of such withholding payment is contested in good faith by appropriate and timely proceedings and as to which payment in full is bonded or reserved against by Borrower. The agreements and obligations of Borrower contained in this Section 2.7 shall survive the termination of this Agreement.

3 CONDITIONS OF LOANS

3.1 Conditions Precedent to Initial Credit Extension. Bank's obligation to make the initial Credit Extension is subject to the condition precedent that Bank shall have received, in form and substance satisfactory to Bank, such documents, and completion of such other matters, as Bank may reasonably deem necessary or appropriate, including, without limitation:

(a) duly executed original signatures to the Loan Documents;

(b) duly executed original signatures to the Control Agreement(s);

(c) the Operating Documents and long-form good standing certificates of each Borrower certified by the Secretary of State (or equivalent agency) of Delaware and each jurisdiction in which each Borrower is qualified to conduct business, each as of a date no earlier than thirty (30) days prior to the Effective Date;

(d) a secretary's certificate of Parent with respect to Parent's Operating Documents, incumbency, specimen signatures and resolutions authorizing the execution and delivery of this Agreement and the other Loan Documents to which it is a party;

(e) a limited liability company borrowing certificate of Delaware Subsidiary with respect to Delaware Subsidiary's Operating Documents, incumbency, specimen signatures and resolutions authorizing the execution and delivery of this Agreement and the other Loan Documents to which it is a party;

(f) duly executed original signatures to the completed Borrowing Resolutions for each Borrower;

(g) duly executed signatures to the IP Agreement, completed exhibits thereto and copies of intellectual property search results with respect to each Borrower;

(h) the Subordination Agreement by PFG in favor of Bank, together with the duly executed signatures thereto and copies of the underlying documents evidencing Borrower's Indebtedness with such Person;

(i) certified copies, dated as of a recent date, of financing statement searches, as Bank may request, accompanied by written evidence (including any UCC termination statements) that the Liens indicated in any such financing statements either constitute Permitted Liens or have been or, in connection with the initial Credit Extension, will be terminated or released;

(j) the Perfection Certificate of each Borrower, together with the duly executed original signature thereto;

(k) a bailee's waiver in favor of Bank for each location where Borrower maintains property with a third party, by each such third party, together with the duly executed original signatures thereto;

(l) evidence satisfactory to Bank that the insurance policies and endorsements required by Section 6.7 hereof are in full force and effect, together with appropriate evidence showing lender loss payable and/or additional insured clauses or endorsements in favor of Bank;

(m) the completion of the Initial Audit; and

(n) payment of the fees and Bank Expenses then due as specified in Section 2.5 hereof.

3.2 Conditions Precedent to all Credit Extensions. Bank's obligations to make each Credit Extension, including the initial Credit Extension, is subject to the following conditions precedent:

(a) timely receipt of the Credit Extension request and any materials and documents required by Section 3.4;

(b) the representations and warranties in this Agreement shall be true, accurate, and complete in all material respects on the date of the proposed Credit Extension, and on the Funding Date of each Credit Extension; provided, however, that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof; and provided, further that those representations and warranties expressly referring to a specific date shall be true, accurate and complete in all material respects as of such date, and no Event of Default shall have occurred and be continuing or result from the Credit Extension. Each Credit Extension is Borrower's representation and warranty on that date that the representations and warranties in this Agreement remain true, accurate, and complete in all material respects; provided, however, that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof; and provided, further that those representations and warranties expressly referring to a specific date shall be true, accurate and complete in all material respects as of such date; and

(c) Bank determines to its reasonable satisfaction that there has not been any material impairment in the general affairs, management, results of operation, financial condition or the prospect of repayment of the Obligations, nor any material adverse deviation by Borrower from the most recent business plan of Borrower presented to and accepted by Bank.

3.3 Covenant to Deliver. Borrower agrees to deliver to Bank each item required to be delivered to Bank under this Agreement as a condition precedent to any Credit Extension. Borrower expressly agrees that a Credit Extension made prior to the receipt by Bank of any such item shall not constitute a waiver by Bank of Borrower's obligation to deliver such item, and the making of any Credit Extension in the absence of a required item shall be in Bank's sole discretion.

3.4 Procedures for Borrowing. Subject to the prior satisfaction of all other applicable conditions to the making of an Advance set forth in this Agreement, to obtain an Advance, Borrower shall notify Bank (which notice shall be irrevocable) by electronic mail by 2:00 p.m. Eastern time on the Funding Date of the Advance. Such notice

shall be made by Borrower through Bank's online banking program, provided, however, if Borrower is not utilizing Bank's online banking program, then such notice shall be in a written format reasonably acceptable to Bank that is executed by an Authorized Signer. Bank shall have received satisfactory evidence that the Board has approved that such Authorized Signer may provide such notices and request Advances. In connection with any such notification, Borrower must promptly deliver to Bank by electronic mail or through Bank's online banking program such reports and information, including without limitation, a Borrowing Base Report, sales journals, cash receipts journals, accounts receivable aging reports, as Bank may request in its sole discretion. Bank shall credit proceeds of an Advance to the Designated Deposit Account. Bank may make Advances under this Agreement based on instructions from an Authorized Signer or without instructions if the Advances are necessary to meet Obligations which have become due.

4 CREATION OF SECURITY INTEREST

4.1 Grant of Security Interest. Borrower hereby grants Bank, to secure the payment and performance in full of all of the Obligations, a continuing security interest in, and pledges to Bank, the Collateral, wherever located, whether now owned or hereafter acquired or arising, and all proceeds and products thereof.

Borrower acknowledges that it previously has entered, and/or may in the future enter, into Bank Services Agreements with Bank. Regardless of the terms of any Bank Services Agreement, Borrower agrees that any amounts Borrower owes Bank thereunder shall be deemed to be Obligations hereunder and that it is the intent of Borrower and Bank to have all such Obligations secured by the first priority perfected security interest in the Collateral granted herein (subject only to Permitted Liens that are permitted pursuant to the terms of this Agreement to have superior priority to Bank's Lien in this Agreement).

If this Agreement is terminated, Bank's Lien in the Collateral shall continue until the Obligations (other than inchoate indemnity obligations) are repaid in full in cash. Upon payment in full in cash of the Obligations (other than inchoate indemnity obligations) and at such time as Bank's obligation to make Credit Extensions has terminated, Bank shall, at the sole cost and expense of Borrower, release its Liens in the Collateral and all rights therein shall revert to Borrower. In the event (x) all Obligations (other than inchoate indemnity obligations), except for Bank Services, are satisfied in full, and (y) this Agreement is terminated, Bank shall terminate the security interest granted herein upon Borrower providing cash collateral acceptable to Bank in its good faith business judgment for Bank Services, if any. In the event such Bank Services consist of outstanding Letters of Credit, Borrower shall provide to Bank cash collateral in an amount equal to (x) if such Letters of Credit are denominated in Dollars, then at least one hundred five percent (105.0%); and (y) if such Letters of Credit are denominated in a Foreign Currency, then at least one hundred ten percent (110.0%), of the Dollar Equivalent of the face amount of all such Letters of Credit plus all interest, fees, and costs due or to become due in connection therewith (as estimated by Bank in its business judgment), to secure all of the Obligations relating to such Letters of Credit.

4.2 Priority of Security Interest. Borrower represents, warrants, and covenants that the security interest granted herein is and shall at all times continue to be a first priority perfected security interest in the Collateral (subject only to Permitted Liens that are permitted pursuant to the terms of this Agreement to have superior priority to Bank's Lien under this Agreement). If Borrower shall acquire a commercial tort claim, Borrower shall promptly notify Bank in a writing signed by Borrower of the general details thereof and grant to Bank 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 Bank.

4.3 Authorization to File Financing Statements. Borrower hereby authorizes Bank to file financing statements, without notice to Borrower, with all appropriate jurisdictions to perfect or protect Bank's interest or rights hereunder, including a notice that any disposition of the Collateral, by either Borrower or any other Person, shall be deemed to violate the rights of Bank under the Code. Such financing statements may indicate the Collateral as "all assets of the Debtor" or words of similar effect, or as being of an equal or lesser scope, or with greater detail, all in Bank's discretion.

5 REPRESENTATIONS AND WARRANTIES

Borrower represents and warrants as follows:

5.1 Due Organization, Authorization; Power and Authority . Borrower is duly existing and in good standing as a Registered Organization in its jurisdiction of formation and is qualified and licensed to do business and is in good standing in any jurisdiction in which the conduct of its business or its ownership of property requires that it be qualified except where the failure to do so could not reasonably be expected to have a material adverse effect on Borrower's business. In connection with this Agreement, Borrower has delivered to Bank a completed certificate signed by Borrower, entitled "Perfection Certificate" (the "**Perfection Certificate**"). Borrower represents and warrants to Bank that (a) Borrower's exact legal name is that indicated on the Perfection Certificate and on the signature page hereof; (b) Borrower is an organization of the type and is organized in the jurisdiction set forth in the Perfection Certificate; (c) the Perfection Certificate accurately sets forth Borrower's organizational identification number or accurately states that Borrower has none; (d) the Perfection Certificate accurately sets forth Borrower's place of business, or, if more than one, its chief executive office as well as Borrower's mailing address (if different than its chief executive office); (e) Borrower (and each of its predecessors) has not, in the past five (5) years, changed its jurisdiction of formation, organizational structure or type, or any organizational number assigned by its jurisdiction; and (f) all other information set forth on the Perfection Certificate pertaining to Borrower and each of its Subsidiaries is accurate and complete (it being understood and agreed that Borrower may from time to time update certain information in the Perfection Certificate after the Effective Date to the extent permitted by one or more specific provisions in this Agreement). If Borrower is not now a Registered Organization but later becomes one, Borrower shall promptly notify Bank of such occurrence and provide Bank with Borrower's organizational identification number.

The execution, delivery and performance by Borrower of the Loan Documents to which it is a party have been duly authorized, and do not (i) conflict with any of Borrower's organizational documents, (ii) contravene, conflict with, constitute a default under or violate any material Requirement of Law, (iii) contravene, conflict or violate any applicable order, writ, judgment, injunction, decree, determination or award of any Governmental Authority by which Borrower or any of its Subsidiaries or any of their property or assets may be bound or affected, (iv) require any action by, filing, registration, or qualification with, or Governmental Approval from, any Governmental Authority (except such Governmental Approvals which have already been obtained and are in full force and effect), or (v) conflict with, contravene, constitute a default or breach under, or result in or permit the termination or acceleration of, any material agreement by which Borrower is bound. Borrower is not in default under any agreement to which it is a party or by which it is bound in which the default could reasonably be expected to have a material adverse effect on Borrower's business.

5.2 Collateral. Borrower has good title to, rights in, and the power to transfer each item of the Collateral upon which it purports to grant a Lien hereunder, free and clear of any and all Liens except Permitted Liens. Borrower has no Collateral Accounts at or with any bank or financial institution other than Bank or Bank's Affiliates except for the Collateral Accounts described in the Perfection Certificate delivered to Bank in connection herewith and which Borrower has taken such actions as are necessary to give Bank a perfected security interest therein, pursuant to the terms of Section 6.8(b). The Accounts are bona fide, existing obligations of the Account Debtors.

The Collateral is not in the possession of any third party bailee (such as a warehouse) except as otherwise provided in the Perfection Certificate. None of the components of the Collateral shall be maintained at locations other than as provided in the Perfection Certificate or as permitted pursuant to Section 7.2.

All Inventory is in all material respects of good and marketable quality, free from material defects.

Borrower is the sole owner of the Intellectual Property which it owns or purports to own except for (a) non-exclusive licenses granted to its customers in the ordinary course of business, (b) over-the-counter software that is commercially available to the public, and (c) material Intellectual Property licensed to Borrower and noted on the Perfection Certificate. Each Patent which it owns or purports to own and which is material to Borrower's business is valid and enforceable, and no part of the Intellectual Property which Borrower owns or purports to own and which is material to Borrower's business has been judged invalid or unenforceable, in whole or in part. To Borrower's knowledge, no claim has been made that any part of the Intellectual Property violates the rights of any third party except to the extent such claim would not reasonably be expected to have a material adverse effect on Borrower's business.

Except as noted on the Perfection Certificate, Borrower is not a party to, nor is it bound by, any Restricted License.

5.3 Accounts Receivable.

(a) For each Account with respect to which Advances are requested, on the date each Advance is requested and made, such Account shall be an Eligible Account.

(b) All statements made and all unpaid balances appearing in all invoices, instruments and other documents evidencing the Eligible Accounts are and shall be true and correct and all such invoices, instruments and other documents, and all of Borrower's Books are genuine and in all respects what they purport to be. All sales and other transactions underlying or giving rise to each Eligible Account shall comply in all material respects with all applicable laws and governmental rules and regulations. Borrower has no knowledge of any actual or imminent Insolvency Proceeding of any Account Debtor whose accounts are Eligible Accounts in any Borrowing Base Report. To Borrower's knowledge, all signatures and endorsements on all documents, instruments, and agreements relating to all Eligible Accounts are genuine, and all such documents, instruments and agreements are legally enforceable in accordance with their terms.

5.4 Litigation. Except as noted on the Perfection Certificate, there are no actions or proceedings pending or, to the knowledge of any Responsible Officer, threatened in writing by or against Borrower or any of its Subsidiaries involving more than, individually or in the aggregate, Two Hundred Fifty Thousand Dollars ($250,000.00).

5.5 Financial Statements; Financial Condition. All consolidated financial statements for Borrower and any of its Subsidiaries delivered to Bank fairly present in all material respects Borrower's consolidated financial condition and Borrower's consolidated results of operations. There has not been any material deterioration in Borrower's consolidated financial condition since the date of the most recent financial statements submitted to Bank.

5.6 Solvency. The fair salable value of Borrower's consolidated assets (including goodwill minus disposition costs) exceeds the fair value of Borrower's liabilities; Borrower is not left with unreasonably small capital after the transactions in this Agreement; and Borrower is able to pay its debts (including trade debts) as they mature.

5.7 Regulatory Compliance. Borrower is not an "investment company" or a company "controlled" by an "investment company" under the Investment Company Act of 1940, as amended. Borrower is not engaged as one of its important activities in extending credit for margin stock (under Regulations X, T and U of the Federal Reserve Board of Governors). Borrower (a) has complied in all material respects with all Requirements of Law, and (b) has not violated any Requirements of Law the violation of which could reasonably be expected to have a material adverse effect on its business. None of Borrower's or any of its Subsidiaries' properties or assets has been used by Borrower or any Subsidiary or, to Borrower's knowledge, by previous Persons, in disposing, producing, storing, treating, or transporting any hazardous substance other than legally. Borrower and each of its Subsidiaries have obtained all consents, approvals and authorizations of, made all declarations or filings with, and given all notices to, all Governmental Authorities that are necessary to continue their respective businesses as currently conducted.

5.8 Subsidiaries; Investments. Borrower does not own any stock, partnership, or other ownership interest or other equity securities except for Permitted Investments.

5.9 Tax Returns and Payments; Pension Contributions. Borrower has timely filed all required tax returns and reports, and Borrower has timely paid all foreign, federal, state and local taxes, assessments, deposits and contributions owed by Borrower except (a) to the extent such taxes are being contested in good faith by appropriate proceedings promptly instituted and diligently conducted, so long as such reserve or other appropriate provision, if any, as shall be required in conformity with GAAP shall have been made therefor, or (b) if such taxes, assessments, deposits and contributions do not, individually or in the aggregate, exceed Twenty-Five Thousand Dollars ($25,000.00).

To the extent Borrower defers payment of any contested taxes, Borrower shall (i) notify Bank in writing of the commencement of, and any material development in, the proceedings, and (ii) post bonds or take any other steps

required to prevent the governmental authority levying such contested taxes from obtaining a Lien upon any of the Collateral that is other than a Permitted Lien. Borrower is unaware of any claims or adjustments proposed for any of Borrower's prior tax years which could result in additional taxes becoming due and payable by Borrower in excess of Twenty-Five Thousand Dollars ($25,000.00). Borrower has paid all amounts necessary to fund all present pension, profit sharing and deferred compensation plans in accordance with their terms, and Borrower has not withdrawn from participation in, and has not permitted partial or complete termination of, or permitted the occurrence of any other event with respect to, any such plan which could reasonably be expected to result in any liability of Borrower, including any liability to the Pension Benefit Guaranty Corporation or its successors or any other governmental agency.

5.10 Use of Proceeds. Borrower shall use the proceeds of the Credit Extensions solely as working capital, and to fund its general business requirements and not for personal, family, household or agricultural purposes.

5.11 Full Disclosure. No written representation, warranty or other statement of Borrower in any certificate or written statement given to Bank, as of the date such representation, warranty, or other statement was made, taken together with all such written certificates and written statements given to Bank, contains any untrue statement of a material fact or omits to state a material fact necessary to make the statements contained in the certificates or statements not misleading (it being recognized by Bank that the projections and forecasts provided by Borrower in good faith and based upon reasonable assumptions are not viewed as facts and that actual results during the period or periods covered by such projections and forecasts may differ from the projected or forecasted results).

5.12 Definition of "Knowledge." For purposes of the Loan Documents, whenever a representation or warranty is made to Borrower's knowledge or awareness, to the "best of" Borrower's knowledge, or with a similar qualification, knowledge or awareness means the actual knowledge, after reasonable investigation, of any Responsible Officer.

6 AFFIRMATIVE COVENANTS

Borrower shall do all of the following:

6.1 Government Compliance.

(a) Maintain its and all its Subsidiaries' legal existence and good standing in their respective jurisdictions of formation and maintain qualification in each jurisdiction in which the failure to so qualify would reasonably be expected to have a material adverse effect on Borrower's business or operations. Borrower shall comply, and have each Subsidiary comply, in all material respects, with all laws, ordinances and regulations to which it is subject.

(b) Obtain all of the Governmental Approvals necessary for the performance by Borrower of its obligations under the Loan Documents to which it is a party and the grant of a security interest to Bank in all of its property. Borrower shall promptly provide copies of any such obtained Governmental Approvals to Bank.

6.2 Financial Statements, Reports, Certificates. Provide Bank with the following:

(a) a Borrowing Base Report (and any schedules related thereto and including any other information requested by Bank with respect to Borrower's Accounts) (i) with each Advance request and (ii) within thirty (30) days after the end of each month;

(b) within thirty (30) days after the end of each month, (A) monthly accounts receivable agings, aged by invoice date, (B) monthly accounts payable agings, aged by invoice date, and outstanding or held check registers, if any, and (C) monthly reconciliations of accounts receivable agings (aged by invoice date), transaction reports, Deferred Revenue report, and general ledger, each in a form of presentation reasonably acceptable to Bank;

(c) as soon as available, but no later than thirty (30) days after the last day of each month, a company prepared consolidated and consolidating balance sheet and income statement covering Borrower's consolidated and Borrower's and each of its Subsidiary's consolidating operations for such month certified by a

Responsible Officer and in a form of presentation reasonably acceptable to Bank (the "**Monthly Financial Statements**");

(d) within thirty (30) days after the last day of each month and together with the Monthly Financial Statements, a duly completed Compliance Certificate signed by a Responsible Officer, certifying that as of the end of such month, Borrower was in full compliance with all of the terms and conditions of this Agreement, and setting forth calculations showing compliance with the financial covenants set forth in this Agreement and such other information as Bank may reasonably request, including, without limitation, a statement that at the end of such month there were no held checks;

(e) within sixty (60) days after the last day of each fiscal year of Borrower, and contemporaneously with any updates or amendments thereto, (i) annual operating budgets (including income statements, balance sheets and cash flow statements, by month), and (ii) annual financial projections (on a quarterly basis), in each case, as approved by the Board, together with any related business forecasts used in the preparation of such annual financial projections;

(f) as soon as available, and in any event within the earlier of (i) one hundred fifty (150) days following the end of Borrower's fiscal year and (ii) within five (5) days of filing with the SEC, audited consolidated financial statements prepared under GAAP, consistently applied, together with an unqualified opinion on the financial statements from an independent certified public accounting firm reasonably acceptable to Bank;

(g) within five (5) days of filing, copies of all periodic and other reports, proxy statements and other materials filed by Borrower and/or any Guarantor with the SEC, any Governmental Authority succeeding to any or all of the functions of the SEC or with any national securities exchange, or distributed to its shareholders, as the case may be. Documents required to be delivered pursuant to the terms hereof (to the extent any such documents are included in materials otherwise filed with the SEC) may be delivered electronically and if so delivered, shall be deemed to have been delivered on the date on which Borrower posts such documents, or provides a link thereto, on Borrower's website on the internet at Borrower's website address; provided, however, Borrower shall promptly notify Bank in writing (which may be by electronic mail) of the posting of any such documents;

(h) within five (5) Business Days of delivery, copies of all statements, reports and notices made available to Borrower's security holders or to any holders of Subordinated Debt;

(i) prompt report of any legal actions pending or threatened in writing against Borrower or any of its Subsidiaries that would reasonably be expected to result in damages or costs to Borrower or any of its Subsidiaries of, individually or in the aggregate, One Hundred Thousand Dollars ($100,000.00) or more; and

(j) promptly, from time to time, such other information regarding Borrower or compliance with the terms of any Loan Documents as reasonably requested by Bank.

6.3 Accounts Receivable.

(a) Schedules and Documents Relating to Accounts. Borrower shall deliver to Bank transaction reports and schedules of collections, as provided in Section 6.2, on Bank's standard forms; provided, however, that Borrower's failure to execute and deliver the same shall not affect or limit Bank's Lien and other rights in all of Borrower's Accounts, nor shall Bank's failure to advance or lend against a specific Account affect or limit Bank's Lien and other rights therein. If requested by Bank, Borrower shall furnish Bank with copies (or, at Bank's request, originals) of all contracts, orders, invoices, and other similar documents, and all shipping instructions, delivery receipts, bills of lading, and other evidence of delivery, for any goods the sale or disposition of which gave rise to such Accounts. In addition, Borrower shall deliver to Bank, on its request, the originals of all instruments, chattel paper, security agreements, guarantees and other documents and property evidencing or securing any Accounts, in the same form as received, with all necessary indorsements, and copies of all credit memos.

(b) Disputes. Borrower shall promptly notify Bank of all disputes or claims relating to Accounts in excess of One Hundred Thousand Dollars ($100,000.00) individually or Two Hundred Fifty Thousand Dollars ($250,000.00) in the aggregate. Borrower may forgive (completely or partially), compromise, or settle any Account for less than payment in full, or agree to do any of the foregoing so long as (i) Borrower does so in good faith, in a commercially reasonable manner, in the ordinary course of business, in arm's-length transactions, and reports the same to Bank in the regular reports provided to Bank; (ii) no Event of Default has occurred and is continuing; and (iii) after taking into account all such discounts, settlements and forgiveness, the total outstanding Advances will not exceed the lesser of the Revolving Line or the Borrowing Base.

(c) Collection of Accounts. Borrower shall direct Account Debtors to deliver or transmit all proceeds of Accounts into a lockbox account, or such other "blocked account" as specified by Bank (either such account, the "**Cash Collateral Account**"). Whether or not an Event of Default has occurred and is continuing, Borrower shall immediately deliver all payments on and proceeds of Accounts to the Cash Collateral Account. Subject to Bank's right to maintain a reserve pursuant to Section 6.3(d), all amounts received in the Cash Collateral Account shall be (i) applied to immediately reduce the Obligations when a Streamline Period is not in effect (unless Bank, in its sole discretion, at times when an Event of Default exists, elects not to so apply such amounts), or (ii) so long as no Event of Default exists, transferred on a daily basis to Borrower's operating account with Bank when a Streamline Period is in effect. Borrower hereby authorizes Bank to transfer to the Cash Collateral Account any amounts that Bank reasonably determines are proceeds of the Accounts (provided that Bank is under no obligation to do so and this allowance shall in no event relieve Borrower of its obligations hereunder).

(d) Reserves. Notwithstanding any terms in this Agreement to the contrary, at times when an Event of Default exists, Bank may hold any proceeds of the Accounts and any amounts in the Cash Collateral Account that are not applied to the Obligations pursuant to Section 6.3(c) above (including amounts otherwise required to be transferred to Borrower's operating account with Bank when a Streamline Period is in effect) as a reserve to be applied to any Obligations regardless of whether such Obligations are then due and payable.

(e) Returns. Provided no Event of Default has occurred and is continuing, if any Account Debtor returns any Inventory to Borrower with a value in excess of Fifty Thousand Dollars ($50,000.00) individually or in the aggregate, Borrower shall promptly (i) determine the reason for such return, (ii) issue a credit memorandum to the Account Debtor in the appropriate amount, and (iii) provide a copy of such credit memorandum to Bank, upon request from Bank. In the event any attempted return occurs after the occurrence and during the continuance of any Event of Default, Borrower shall hold the returned Inventory in trust for Bank, and immediately notify Bank of the return of the Inventory.

(f) Verifications; Confirmations; Credit Quality; Notifications. Bank may, from time to time, (i) verify and confirm directly with the respective Account Debtors the validity, amount and other matters relating to the Accounts, either in the name of Borrower or Bank or such other name as Bank may choose, and notify any Account Debtor of Bank's security interest in such Account and/or (ii) conduct a credit check of any Account Debtor to approve any such Account Debtor's credit. In addition, Bank may notify Account Debtors to make payments in respect of Accounts directly to Bank. Except during the existence of an Event of Default, Bank shall consult with Borrower prior to making any direct contact with an Account Debtor.

(g) No Liability. Bank shall not be responsible or liable for any shortage or discrepancy in, damage to, or loss or destruction of, any goods, the sale or other disposition of which gives rise to an Account, or for any error, act, omission, or delay of any kind occurring in the settlement, failure to settle, collection or failure to collect any Account, or for settling any Account in good faith for less than the full amount thereof, nor shall Bank be deemed to be responsible for any of Borrower's obligations under any contract or agreement giving rise to an Account. Nothing herein shall, however, relieve Bank from liability for its own gross negligence or willful misconduct.

6.4 Remittance of Proceeds. Except as otherwise provided in Section 6.3(c), deliver, in kind, all proceeds arising from the disposition of any Collateral to Bank in the original form in which received by Borrower not later than the following Business Day after receipt by Borrower, to be applied to the Obligations (a) prior to an Event of Default, pursuant to the terms of Section 6.3(c) hereof, and (b) after the occurrence and during the continuance of an Event of

Default, pursuant to the terms of Section 9.4 hereof; provided that, if no Event of Default has occurred and is continuing, Borrower shall not be obligated to remit to Bank the proceeds of the sale of worn out or obsolete Equipment disposed of by Borrower in good faith in an arm's length transaction for an aggregate purchase price of One Hundred Thousand Dollars ($100,000.00) or less (for all such transactions in any fiscal year). Borrower agrees that it will not commingle proceeds of Collateral with any of Borrower's other funds or property, but will hold such proceeds separate and apart from such other funds and property and in an express trust for Bank. Nothing in this Section 6.4 limits the restrictions on disposition of Collateral set forth elsewhere in this Agreement.

6.5 Taxes; Pensions. Timely file, and require each of its Subsidiaries to timely file, all required tax returns and reports and timely pay, and require each of its Subsidiaries to timely pay, all foreign, federal, state and local taxes, assessments, deposits and contributions owed by Borrower and each of its Subsidiaries, except for deferred payment of any taxes contested pursuant to the terms of Section 5.9 hereof, and shall deliver to Bank, on demand, appropriate certificates attesting to such payments, and pay all amounts necessary to fund all present pension, profit sharing and deferred compensation plans in accordance with their terms.

6.6 Access to Collateral; Books and Records. At reasonable times, on three (3) Business Days' notice (provided no notice is required if an Event of Default has occurred and is continuing), Bank, or its agents, shall have the right to inspect the Collateral and the right to audit and copy Borrower's Books. Such inspections and audits shall be conducted as frequently as Bank determines in its sole but reasonable discretion that conditions warrant. The foregoing inspections and audits shall be conducted at Borrower's expense and the charge therefor shall be One Thousand Dollars ($1,000.00) per person per day (or such higher amount as shall represent Bank's then-current standard charge for the same), plus reasonable out-of-pocket expenses. In the event Borrower and Bank schedule an audit more than ten (10) days in advance, and Borrower cancels or seeks to or reschedules the audit with less than ten (10) days written notice to Bank, then (without limiting any of Bank's rights or remedies) Borrower shall pay Bank a fee of One Thousand Dollars ($1,000.00) plus any out-of-pocket expenses incurred by Bank to compensate Bank for the anticipated costs and expenses of the cancellation or rescheduling.

6.7 Insurance.

(a) Keep its business and the Collateral insured for risks and in amounts standard for companies in Borrower's industry and location and as Bank may reasonably request. Insurance policies shall be in a form, with financially sound and reputable insurance companies that are not Affiliates of Borrower, and in amounts that are satisfactory to Bank. All property policies shall have a lender's loss payable endorsement showing Bank as lender loss payee. All liability policies shall show, or have endorsements showing, Bank as an additional insured. Bank shall be named as lender loss payee and/or additional insured with respect to any such insurance providing coverage in respect of any Collateral.

(b) Ensure that proceeds payable under any property policy are, at Bank's option, payable to Bank on account of the Obligations.

(c) At Bank's request, Borrower shall deliver certified copies of insurance policies and evidence of all premium payments. Each provider of any such insurance required under this Section 6.7 shall agree, by endorsement upon the policy or policies issued by it or by independent instruments furnished to Bank, that it will give Bank thirty (30) days prior written notice before any such policy or policies shall be materially altered or canceled. If Borrower fails to obtain insurance as required under this Section 6.7 or to pay any amount or furnish any required proof of payment to third persons and Bank, Bank may make all or part of such payment or obtain such insurance policies required in this Section 6.7, and take any action under the policies Bank deems prudent.

6.8 Accounts.

(a) Maintain all and all of its Subsidiaries' operating and other depository accounts, the Cash Collateral Account and securities/investment accounts with Bank and Bank's Affiliates; provided, however, during the Transition Period, Borrower shall be permitted to maintain (i) lockbox accounts with JP Morgan Chase Bank (the "**Chase Accounts**") provided that Borrower shall transfer any and all funds maintained or deposited into the Chase

Accounts into an account of Borrower maintained with Bank on a bi-weekly basis and (ii) one (1) account with Regions Bank, provided that the maximum balance in the Regions Account shall not at any time exceed Ten Thousand Dollars ($10,000.00) (the "**Regions Account**" and collectively with the Chase Accounts, the "**Temporary Accounts**"). Notwithstanding the foregoing, the Borrower shall be permitted to maintain certificates of deposit with JP Morgan Chase Bank to secure Borrower's letter of credit with JP Morgan Chase Bank maintained as a security deposit for Borrower's lease of its headquarters premises, provided that the aggregate balance maintained in such certificates of deposit does not at any time exceed Three Hundred Six Thousand Dollars ($306,000.00) plus accrued interest (collectively, the "**CD Accounts**"). Any Guarantor shall maintain all depository, operating and securities/investment accounts with Bank and Bank's Affiliates. In addition, Borrower and any Guarantor shall use Bank for all foreign exchange and letters of credit.

(b) In addition to and without limiting the restrictions in (a), Borrower shall provide Bank five (5) Business Days prior written notice before establishing any Collateral Account at or with any bank or financial institution other than Bank or Bank's Affiliates. For each Collateral Account that Borrower at any time maintains, Borrower shall cause the applicable bank or financial institution (other than Bank) at or with which any Collateral Account is maintained to execute and deliver a Control Agreement or other appropriate instrument with respect to such Collateral Account to perfect Bank's Lien in such Collateral Account in accordance with the terms hereunder which Control Agreement may not be terminated without the prior written consent of Bank. The provisions of the previous sentence shall not apply to (i) the CD Accounts, (ii) the Temporary Accounts during the Transition Period, or (ii) deposit accounts exclusively used for payroll, payroll taxes and other employee wage and benefit payments to or for the benefit of Borrower's employees and identified to Bank by Borrower as such.

6.9 Financial Covenants.

(a) Adjusted EBITDA. Achieve, to be tested as of the last day of each month, calculated on a consolidated basis with respect to Borrower and its Subsidiaries, measured on a trailing three (3) month basis, Adjusted EBITDA, for the period indicated in accordance with the following schedule, of at least:

Three (3) Month Period Ending	Adjusted EBITDA
December 31, 2016	($3,000,000.00)
January 31, 2017	($3,000,000.00)
February 28, 2017	($3,000,000.00)
March 31, 2017	($3,000,000.00)
April 30, 2017	($3,000,000.00)
May 31, 2017	($3,000,000.00)
June 30, 2017	($2,500,000.00)
July 31, 2017	($2,500,000.00)
August 31, 2017	($2,500,000.00)
September 30, 2017	($2,500,000.00)
October 31, 2017	($2,500,000.00)
November 30, 2017	($2,500,000.00)
December 31, 2017	($1,750,000.00)
January 31, 2018	($1,750,000.00)
February 28, 2018	($1,750,000.00)
March 31, 2018	($750,000.00)
April 30, 2018	($750,000.00)
May 31, 2018	($750,000.00)
June 30, 2018 and each period thereafter	$1.00

(b) Minimum Revenue. Achieve, to be tested as of the last day of each quarter, calculated on a consolidated basis with respect to Borrower and its Subsidiaries, revenue for each fiscal quarter, for the period indicated in accordance with the following schedule, of at least:

Quarter Ending	Minimum Revenue
March 31, 2017	$5,913,942.00
June 30, 2017	$6,462,869.00
September 30, 2017	$6,136,190.00
December 31, 2017	$7,431,614.00

With respect to the period ending March 31, 2018 and each period thereafter, the levels of minimum revenue shall be set by Bank in its sole discretion, based upon Borrower's Board-approved operating plan and financial projections. With respect thereto:

(i) Borrower's failure to either (1) agree in writing (which agreement shall be set forth in a written amendment to this Agreement) on or before February 28, 2018, to any such covenant levels with respect to Borrower's fiscal year ending December 31, 2018, or (2) notwithstanding Section 6.2(e) of this Agreement, deliver to Bank, on or before the earlier to occur of (i) January 31, 2018 or (ii) approval by the Board, Borrower's budgets, sales projections, operating plans and other financial information of Borrower that Bank deems relevant, including, without limitation, Borrower's Board-approved operating budgets, projections and plans, with respect to Borrower's fiscal year ending December 31, 2018, shall result in an immediate Event of Default for which there shall be no grace or cure period; and

(ii) Borrower's failure to either (1) agree in writing (which agreement shall be set forth in a written amendment to this Agreement) on or before February 28, 2019, to any such covenant levels with respect to Borrower's fiscal year ending December 31, 2019, or (2) notwithstanding Section 6.2(e) of this Agreement, deliver to Bank, on or before the earlier to occur of (i) January 31, 2019 or (ii) approval by the Board, Borrower's budgets, sales projections, operating plans and other financial information of Borrower that Bank deems relevant, including, without limitation, Borrower's Board-approved operating budgets, projections and plans, with respect to Borrower's fiscal year ending December 31, 2019, shall result in an immediate Event of Default for which there shall be no grace or cure period.

(c) Minimum Liquidity. Maintain at all times, to be tested as of the last day of each month, Liquidity of at least Three Million Five Hundred Thousand Dollars ($3,500,000.00).

6.10 Protection and Registration of Intellectual Property Rights.

(a) (i) Protect, defend and maintain the validity and enforceability of any Intellectual Property material to Borrower's business; (ii) promptly advise Bank in writing of material infringements or any other event that could reasonably be expected to materially and adversely affect the value of its Intellectual Property; and (iii) not allow any Intellectual Property material to Borrower's business to be abandoned, forfeited or dedicated to the public without Bank's written consent.

(b) If Borrower (i) obtains any Patent, registered Trademark, registered Copyright, registered mask work, or any pending application for any of the foregoing, whether as owner, licensee or otherwise, or (ii) applies for any Patent or the registration of any Trademark, then Borrower shall, together with the delivery of the next succeeding Compliance Certificate, provide written notice thereof to Bank and shall execute such intellectual property security agreements and other documents and take such other actions as Bank may request in its good faith business judgment to perfect and maintain a first priority perfected security interest in favor of Bank in such property. If Borrower decides to register any Copyrights or mask works in the United States Copyright Office, Borrower shall: (x) provide Bank with at least fifteen (15) days prior written notice of Borrower's intent to register such Copyrights or mask works together with a copy of the application it intends to file with the United States Copyright Office (excluding exhibits thereto);

(y) execute an intellectual property security agreement and such other documents and take such other actions as Bank may request in its good faith business judgment to perfect and maintain a first priority perfected security interest in favor of Bank in the Copyrights or mask works intended to be registered with the United States Copyright Office; and (z) record such intellectual property security agreement with the United States Copyright Office contemporaneously with filing the Copyright or mask work application(s) with the United States Copyright Office. Borrower shall promptly provide to Bank copies of all applications that it files for Patents or for the registration of Trademarks, Copyrights or mask works, together with evidence of the recording of the intellectual property security agreement required for Bank to perfect and maintain a first priority perfected security interest in such property.

(c) Provide written notice to Bank within ten (10) days of entering or becoming bound by any Restricted License (other than over-the-counter software that is commercially available to the public). Borrower shall take such steps as Bank reasonably requests to obtain the consent of, or waiver by, any person whose consent or waiver is necessary for (i) any Restricted License to be deemed "Collateral" and for Bank to have a security interest in it that might otherwise be restricted or prohibited by law or by the terms of any such Restricted License, whether now existing or entered into in the future, and (ii) Bank to have the ability in the event of a liquidation of any Collateral to dispose of such Collateral in accordance with Bank's rights and remedies under this Agreement and the other Loan Documents.

6.11 Litigation Cooperation. From the date hereof and continuing through the termination of this Agreement, make available to Bank, without expense to Bank, Borrower's officers, employees and agents and Borrower's books and records, to the extent that Bank may deem them reasonably necessary to prosecute or defend any third-party suit or proceeding instituted by or against Bank with respect to any Collateral or relating to Borrower.

6.12 Online Banking. Utilize Bank's online banking platform for all matters requested by Bank which shall include, without limitation (and without request by Bank for the following matters), uploading information pertaining to Accounts and Account Debtors, requesting approval for exceptions, requesting Credit Extensions, and uploading financial statements and other reports required to be delivered by this Agreement (including, without limitation, those described in Section 6.2 of this Agreement).

6.13 Further Assurances. Execute any further instruments and take further action as Bank reasonably requests to perfect or continue Bank's Lien in the Collateral or to effect the purposes of this Agreement. Deliver to Bank, within five (5) Business Days after the same are sent or received, copies of all correspondence, reports, documents and other filings with any Governmental Authority regarding compliance with or maintenance of Governmental Approvals or Requirements of Law that could reasonably be expected to have a material effect on any of the Governmental Approvals or otherwise on the operations of Borrower or any of its Subsidiaries.

6.14 Post-Closing Condition. Deliver to Bank, within sixty (60) days following the Effective Date, a landlord's consent in favor of Bank for each of Borrower's leased locations, by the respective landlord thereof, together with the duly executed original signatures thereto.

7 NEGATIVE COVENANTS

Borrower shall not do any of the following without Bank's prior written consent:

7.1 Dispositions. Convey, sell, lease, transfer, assign, or otherwise dispose of (collectively, "**Transfer**"), or permit any of its Subsidiaries to Transfer, all or any part of its business or property, except for Transfers (a) of Inventory in the ordinary course of business; (b) of worn-out or obsolete Equipment that is, in the reasonable judgment of Borrower, no longer economically practicable to maintain or useful in the ordinary course of business of Borrower; (c) consisting of Permitted Liens and Permitted Investments; (d) consisting of the sale or issuance of any stock of Borrower permitted under Section 7.2 of this Agreement; (e) consisting of Borrower's use or transfer of money or Cash Equivalents in a manner that is not prohibited by the terms of this Agreement or the other Loan Documents; and (f) of non-exclusive licenses, joint ventures, and corporate collaborations for the use of the property of Borrower or its Subsidiaries in the ordinary course of business.

7.2 Changes in Business, Management, Control, or Business Locations. (a) Engage in or permit any of its Subsidiaries to engage in any business other than the businesses currently engaged in by Borrower and such Subsidiary, as applicable, or reasonably related thereto; (b) liquidate or dissolve; (c) fail to provide notice to Bank of any Key Person departing from or ceasing to be employed by Borrower within five (5) Business Days after such Key Person's departure from Borrower; or (d) permit or suffer any Change in Control.

Borrower shall not, without at least thirty (30) days prior written notice to Bank: (1) add any new offices or business locations, including warehouses (unless such new offices or business locations contain less than Ten Thousand Dollars ($10,000.00) in Borrower's assets or property) or deliver any portion of the Collateral valued, individually or in the aggregate, in excess of Twenty-Five Thousand Dollars ($25,000.00) to a bailee at a location other than to a bailee and at a location already disclosed in the Perfection Certificate, (2) change its jurisdiction of organization, (3) change its organizational type, (4) change its legal name, or (5) change any organizational number (if any) assigned by its jurisdiction of organization. If Borrower intends to deliver any portion of the Collateral valued, individually or in the aggregate, in excess of Twenty-Five Thousand Dollars ($25,000.00) to a bailee, and Bank and such bailee are not already parties to a bailee agreement governing both the Collateral and the location to which Borrower intends to deliver the Collateral, then Borrower will first receive the written consent of Bank, and if requested by Bank, such bailee shall execute and deliver a bailee agreement in form and substance reasonably satisfactory to Bank.

7.3 Mergers or Acquisitions. Merge or consolidate, or permit any of its Subsidiaries to merge or consolidate, with any other Person, or acquire, or permit any of its Subsidiaries to acquire, all or substantially all of the capital stock or property of another Person (including, without limitation, by the formation of any Subsidiary). Notwithstanding the foregoing, a Subsidiary may merge or consolidate into another Subsidiary or into Borrower.

7.4 Indebtedness. Create, incur, assume, or be liable for any Indebtedness, or permit any Subsidiary to do so, other than Permitted Indebtedness.

7.5 Encumbrance. Create, incur, allow, or suffer any Lien on any of its property, or assign or convey any right to receive income, including the sale of any Accounts, or permit any of its Subsidiaries to do so, except for Permitted Liens, permit any Collateral not to be subject to the first priority security interest granted herein, or enter into any agreement, document, instrument or other arrangement (except with or in favor of Bank) with any Person which directly or indirectly prohibits or has the effect of prohibiting Borrower or any Subsidiary from assigning, mortgaging, pledging, granting a security interest in or upon, or encumbering any of Borrower's or any Subsidiary's Intellectual Property, except as is otherwise permitted in Section 7.1 hereof and the definition of "Permitted Liens" herein.

7.6 Maintenance of Collateral Accounts. Maintain any Collateral Account except pursuant to the terms of Section 6.8(b) hereof.

7.7 Distributions; Investments. (a) Pay any dividends or make any distribution or payment or redeem, retire or purchase any capital stock; or (b) directly or indirectly make any Investment (including, without limitation, by the formation of any Subsidiary) other than Permitted Investments, or permit any of its Subsidiaries to do so, except for distributions by a Subsidiary to Borrower.

7.8 Transactions with Affiliates . Directly or indirectly enter into or permit to exist any material transaction with any Affiliate of Borrower, except for transactions that are in the ordinary course of Borrower's business, upon fair and reasonable terms that are no less favorable to Borrower than would be obtained in an arm's length transaction with a non-affiliated Person.

7.9 Subordinated Debt. (a) Make or permit any payment on any Subordinated Debt, except under the terms of the subordination, intercreditor, or other similar agreement to which such Subordinated Debt is subject, or (b) amend any provision in any document relating to the Subordinated Debt which would increase the amount thereof, provide for earlier or greater principal, interest, or other payments thereon, or adversely affect the subordination thereof to Obligations owed to Bank.

7.10 Compliance. Become an "investment company" or a company controlled by an "investment company", under the Investment Company Act of 1940, as amended, or undertake as one of its important activities extending credit to purchase or carry margin stock (as defined in Regulation U of the Board of Governors of the Federal Reserve System), or use the proceeds of any Credit Extension for that purpose; fail to meet the minimum funding requirements of ERISA, permit a Reportable Event or Prohibited Transaction, as defined in ERISA, to occur; fail to comply with the Federal Fair Labor Standards Act or violate any other law or regulation, if the violation could reasonably be expected to have a material adverse effect on Borrower's business, or permit any of its Subsidiaries to do so; withdraw or permit any Subsidiary to withdraw from participation in, permit partial or complete termination of, or permit the occurrence of any other event with respect to, any present pension, profit sharing and deferred compensation plan which could reasonably be expected to result in any liability of Borrower, including any liability to the Pension Benefit Guaranty Corporation or its successors or any other governmental agency.

8 EVENTS OF DEFAULT

Any one of the following shall constitute an event of default (an "**Event of Default**") under this Agreement:

8.1 Payment Default. Borrower fails to (a) make any payment of principal or interest on any Credit Extension when due, or (b) pay any other Obligations within three (3) Business Days after such Obligations are due and payable (which three (3) Business Day cure period shall not apply to payments due on the Revolving Line Maturity Date). During the cure period, the failure to make or pay any payment specified under clause (b) hereunder is not an Event of Default (but no Credit Extension will be made during the cure period);

8.2 Covenant Default. Borrower (a) fails or neglects to perform any obligation in Section 6 of this Agreement or violates any covenant in Section 7 of this Agreement or (b) fails or neglects to perform, keep, or observe any other term, provision, condition, covenant or agreement contained in this Agreement or any Loan Documents and as to any default (other than those specified in clause (a)) under such other term, provision, condition, covenant or agreement that can be cured, has failed to cure the default within ten (10) days after the occurrence thereof; provided, however, that if the default cannot by its nature be cured within the ten (10) day period or cannot after diligent attempts by Borrower be cured within such ten (10) day period, and such default is likely to be cured within a reasonable time, then Borrower shall have an additional period (which shall not in any case exceed twenty (20) days) to attempt to cure such default, and within such reasonable time period the failure to cure the default shall not be deemed an Event of Default (but no Credit Extensions shall be made during such cure period); and provided, further, however, grace and cure periods provided under this Section 8.2 shall not apply, among other things, to financial covenants or any other covenants that are required to be satisfied, completed or tested by a date certain or any covenants set forth in clause (a);

8.3 Material Adverse Change. A Material Adverse Change occurs;

8.4 Attachment; Levy; Restraint on Business.

(a) (i) The service of process seeking to attach, by trustee or similar process, any funds of Borrower or of any entity under the control of Borrower (including a Subsidiary), or (ii) a notice of lien or levy is filed against any of Borrower's assets by any Governmental Authority, and the same under subclauses (i) and (ii) hereof are not, within ten (10) days after the occurrence thereof, discharged or stayed (whether through the posting of a bond or otherwise); provided, however, no Credit Extensions shall be made during any ten (10) day cure period; or

(b) (i) any material portion of Borrower's assets is attached, seized, levied on, or comes into possession of a trustee or receiver, or (ii) any court order enjoins, restrains, or prevents Borrower from conducting all or any material part of its business;

8.5 Insolvency. (a) Borrower or any of its Subsidiaries is unable to pay its debts (including trade debts) as they become due or otherwise becomes insolvent; (b) Borrower or any of its Subsidiaries begins an Insolvency Proceeding; or (c) an Insolvency Proceeding is begun against Borrower or any of its Subsidiaries and is not dismissed

or stayed within forty-five (45) days (but no Credit Extensions shall be made while any of the conditions described in clause (a) exist and/or until any Insolvency Proceeding is dismissed);

8.6 Other Agreements. There is, under any agreement to which Borrower or any Guarantor is a party with a third party or parties, (a) any default resulting in the acceleration of the maturity of any Indebtedness in an amount individually or in the aggregate in excess of One Hundred Thousand Dollars ($100,000.00); or (b) any breach or default by Borrower or Guarantor, the result of which could reasonably be expected to have a material adverse effect on Borrower's or any Guarantor's business;

8.7 Judgments; Penalties. One or more fines, penalties or final judgments, orders or decrees for the payment of money in an amount, individually or in the aggregate, of at least One Hundred Thousand Dollars ($100,000.00) (not covered by independent third-party insurance as to which liability has been accepted by such insurance carrier) shall be rendered against Borrower by any Governmental Authority, and the same are not, within ten (10) days after the entry, assessment or issuance thereof, discharged, satisfied, or paid, or after execution thereof, stayed or bonded pending appeal, or such judgments are not discharged prior to the expiration of any such stay (provided that no Credit Extensions will be made prior to the satisfaction, payment, discharge, stay, or bonding of such fine, penalty, judgment, order or decree);

8.8 Misrepresentations. Borrower or any Person acting for Borrower makes any representation, warranty, or other statement now or later in this Agreement, any Loan Document or in any writing delivered to Bank or to induce Bank to enter this Agreement or any Loan Document, and such representation, warranty, or other statement is incorrect in any material respect when made;

8.9 Subordinated Debt. Any document, instrument, or agreement evidencing any Subordinated Debt shall for any reason be revoked or invalidated or otherwise cease to be in full force and effect, any Person shall be in breach thereof or contest in any manner the validity or enforceability thereof or deny that it has any further liability or obligation thereunder, or the Obligations shall for any reason be subordinated or shall not have the priority contemplated by this Agreement or any applicable subordination or intercreditor agreement;

8.10 Guaranty. (a) Any guaranty of any Obligations terminates or ceases for any reason to be in full force and effect; (b) any Guarantor does not perform any obligation or covenant under any guaranty of the Obligations; (c) any circumstance described in Sections 8.3, 8.4, 8.5, 8.6, 8.7, or 8.8 of this Agreement occurs with respect to any Guarantor, (d) the death, liquidation, winding up, or termination of existence of any Guarantor; or (e) (i) a material impairment in the perfection or priority of Bank's Lien in the collateral provided by Guarantor or in the value of such collateral or (ii) a material adverse change in the general affairs, management, results of operation, condition (financial or otherwise) or the prospect of repayment of the Obligations occurs with respect to any Guarantor;

8.11 Governmental Approvals. Any Governmental Approval shall have been (a) revoked, rescinded, suspended, modified in an adverse manner or not renewed in the ordinary course for a full term or (b) subject to any decision by a Governmental Authority that designates a hearing with respect to any applications for renewal of any of such Governmental Approval or that could result in the Governmental Authority taking any of the actions described in clause (a) above, and such decision or such revocation, rescission, suspension, modification or non-renewal (i) causes, or could reasonably be expected to cause, a Material Adverse Change, or (ii) adversely affects the legal qualifications of Borrower or any of its Subsidiaries to hold such Governmental Approval in any applicable jurisdiction and such revocation, rescission, suspension, modification or non-renewal could reasonably be expected to affect the status of or legal qualifications of Borrower or any of its Subsidiaries to hold any Governmental Approval in any other jurisdiction; or

8.12 PFG Loan Agreement. The occurrence of an Event of Default (as defined in the PFG Loan Agreement) under the PFG Loan Agreement.

9 BANK'S RIGHTS AND REMEDIES

9.1 Rights and Remedies. Upon the occurrence and during the continuance of an Event of Default, Bank may, without notice or demand, do any or all of the following:

(a) declare all Obligations immediately due and payable (but if an Event of Default described in Section 8.5 occurs all Obligations are immediately due and payable without any action by Bank);

(b) stop advancing money or extending credit for Borrower's benefit under this Agreement or under any other agreement between Borrower and Bank;

(c) demand that Borrower (i) deposit cash with Bank in an amount equal to at least (A) one hundred five percent (105.0%) of the Dollar Equivalent of the aggregate face amount of all Letters of Credit denominated in Dollars remaining undrawn, and (B) one hundred ten percent (110.0%) of the Dollar Equivalent of the aggregate face amount of all Letters of Credit denominated in a Foreign Currency remaining undrawn, (plus, in each case, all interest, fees, and costs due or to become due in connection therewith (as estimated by Bank in its good faith business judgment)), to secure all of the Obligations relating to such Letters of Credit, as collateral security for the repayment of any future drawings under such Letters of Credit, and Borrower shall forthwith deposit and pay such amounts, and (ii) pay in advance all letter of credit fees scheduled to be paid or payable over the remaining term of any Letters of Credit;

(d) terminate any FX Contracts;

(e) verify the amount of, demand payment of and performance under, and collect any Accounts and General Intangibles, settle or adjust disputes and claims directly with Account Debtors for amounts on terms and in any order that Bank considers advisable, and notify any Person owing Borrower money of Bank's security interest in such funds. Borrower shall collect all payments in trust for Bank and, if requested by Bank, immediately deliver the payments to Bank in the form received from the Account Debtor, with proper endorsements for deposit;

(f) make any payments and do any acts it considers necessary or reasonable to protect the Collateral and/or its security interest in the Collateral. Borrower shall assemble the Collateral if Bank requests and make it available as Bank designates. Bank may enter premises where the Collateral is located, take and maintain possession of any part of the Collateral, and pay, purchase, contest, or compromise any Lien which appears to be prior or superior to its security interest and pay all expenses incurred. Borrower grants Bank a license to enter and occupy any of its premises, without charge, to exercise any of Bank's rights or remedies;

(g) apply to the Obligations any (i) balances and deposits of Borrower it holds, or (ii) amount held by Bank owing to or for the credit or the account of Borrower;

(h) ship, reclaim, recover, store, finish, maintain, repair, prepare for sale, advertise for sale, and sell the Collateral. Bank is hereby granted a non-exclusive, royalty-free license or other right to use, without charge, Borrower's labels, Patents, Copyrights, mask works, rights of use of any name, trade secrets, trade names, Trademarks, and advertising matter, or any similar property as it pertains to the Collateral, in completing production of, advertising for sale, and selling any Collateral and, in connection with Bank's exercise of its rights under this Section, Borrower's rights under all licenses and all franchise agreements inure to Bank's benefit;

(i) place a "hold" on any account maintained with Bank and/or deliver a notice of exclusive control, any entitlement order, or other directions or instructions pursuant to any Control Agreement or similar agreements providing control of any Collateral;

(j) demand and receive possession of Borrower's Books; and

(k) exercise all rights and remedies available to Bank under the Loan Documents or at law or equity, including all remedies provided under the Code (including disposal of the Collateral pursuant to the terms thereof).

9.2 Power of Attorney. Borrower hereby irrevocably appoints Bank as its lawful attorney-in-fact to: (a) exercisable following the occurrence and during the continuance of an Event of Default, (i) sign Borrower's name on any invoice or bill of lading for any Account or drafts against Account Debtors; (ii) demand, collect, sue, and give releases to any Account Debtor for monies due, settle and adjust disputes and claims about the Accounts directly with Account Debtors, and compromise, prosecute, or defend any action, claim, case, or proceeding about any Collateral (including filing a claim or voting a claim in any bankruptcy case in Bank's or Borrower's name, as Bank chooses); (iii) make, settle, and adjust all claims under Borrower's insurance policies; (iv) pay, contest or settle any Lien, charge, encumbrance, security interest, or other claim in or to the Collateral, or any judgment based thereon, or otherwise take any action to terminate or discharge the same; (v) transfer the Collateral into the name of Bank or a third party as the Code permits; and (vi) receive, open and dispose of mail addressed to Borrower; and (b) regardless of whether an Event of Default has occurred, (i) endorse Borrower's name on any checks, payment instruments, or other forms of payment or security; and (ii) notify all Account Debtors to pay Bank directly. Borrower hereby appoints Bank as its lawful attorney-in-fact to sign Borrower's name on any documents necessary to perfect or continue the perfection of Bank's security interest in the Collateral regardless of whether an Event of Default has occurred until all Obligations have been satisfied in full and the Loan Documents have been terminated. Bank's foregoing appointment as Borrower's attorney in fact, and all of Bank's rights and powers, coupled with an interest, are irrevocable until all Obligations have been fully repaid and performed and the Loan Documents have been terminated.

9.3 Protective Payments. If Borrower fails to obtain the insurance called for by Section 6.7 or fails to pay any premium thereon or fails to pay any other amount which Borrower is obligated to pay under this Agreement or any other Loan Document or which may be required to preserve the Collateral, Bank may obtain such insurance or make such payment, and all amounts so paid by Bank are Bank Expenses and immediately due and payable, bearing interest at the then highest rate applicable to the Obligations, and secured by the Collateral. Bank will make reasonable efforts to provide Borrower with notice of Bank obtaining such insurance at the time it is obtained or within a reasonable time thereafter. No payments by Bank are deemed an agreement to make similar payments in the future or Bank's waiver of any Event of Default.

9.4 Application of Payments and Proceeds. If an Event of Default has occurred and is continuing, Bank shall have the right to apply in any order any funds in its possession, whether from Borrower account balances, payments, proceeds realized as the result of any collection of Accounts or other disposition of the Collateral, or otherwise, to the Obligations. Bank shall pay any surplus to Borrower by credit to the Designated Deposit Account or to other Persons legally entitled thereto; Borrower shall remain liable to Bank for any deficiency. If Bank, directly or indirectly, enters into a deferred payment or other credit transaction with any purchaser at any sale of Collateral, Bank shall have the option, exercisable at any time, of either reducing the Obligations by the principal amount of the purchase price or deferring the reduction of the Obligations until the actual receipt by Bank of cash therefor.

9.5 Bank's Liability for Collateral. So long as Bank complies with reasonable banking practices regarding the safekeeping of the Collateral in the possession or under the control of Bank, Bank shall not be liable or responsible for: (a) the safekeeping of the Collateral; (b) any loss or damage to the Collateral; (c) any diminution in the value of the Collateral; or (d) any act or default of any carrier, warehouseman, bailee, or other Person. Borrower bears all risk of loss, damage or destruction of the Collateral.

9.6 No Waiver; Remedies Cumulative. Bank's failure, at any time or times, to require strict performance by Borrower of any provision of this Agreement or any other Loan Document shall not waive, affect, or diminish any right of Bank thereafter to demand strict performance and compliance herewith or therewith. No waiver hereunder shall be effective unless signed by the party granting the waiver and then is only effective for the specific instance and purpose for which it is given. Bank's rights and remedies under this Agreement and the other Loan Documents are cumulative. Bank has all rights and remedies provided under the Code, by law, or in equity. Bank's exercise of one right or remedy is not an election and shall not preclude Bank from exercising any other remedy under this Agreement or other remedy available at law or in equity, and Bank's waiver of any Event of Default is not a continuing waiver. Bank's delay in exercising any remedy is not a waiver, election, or acquiescence.

9.7 Demand Waiver. Borrower waives demand, notice of default or dishonor, notice of payment and nonpayment, notice of any default, nonpayment at maturity, release, compromise, settlement, extension, or renewal of accounts, documents, instruments, chattel paper, and guarantees held by Bank on which Borrower is liable.

9.8 Borrower Liability. Either Borrower may, acting singly, request Credit Extensions hereunder. Each Borrower hereby appoints the other as agent for the other for all purposes hereunder, including with respect to requesting Credit Extensions hereunder. Each Borrower hereunder shall be jointly and severally obligated to repay all Credit Extensions made hereunder, regardless of which Borrower actually receives said Advance, as if each Borrower hereunder directly received all Credit Extensions. Each Borrower waives (a) any suretyship defenses available to it under the Code or any other applicable law, and (b) any right to require Bank to: (i) proceed against any Borrower or any other person; (ii) proceed against or exhaust any security; or (iii) pursue any other remedy. Bank may exercise or not exercise any right or remedy it has against any Borrower or any security it holds (including the right to foreclose by judicial or non-judicial sale) without affecting any Borrower's liability. Notwithstanding any other provision of this Agreement or other related document, each Borrower irrevocably waives all rights that it may have at law or in equity (including, without limitation, any law subrogating Borrower to the rights of Bank under this Agreement) to seek contribution, indemnification or any other form of reimbursement from any other Borrower, or any other Person now or hereafter primarily or secondarily liable for any of the Obligations, for any payment made by Borrower with respect to the Obligations in connection with this Agreement or otherwise and all rights that it might have to benefit from, or to participate in, any security for the Obligations as a result of any payment made by Borrower with respect to the Obligations in connection with this Agreement or otherwise. Any agreement providing for indemnification, reimbursement or any other arrangement prohibited under this Section 9.8 shall be null and void. If any payment is made to a Borrower in contravention of this Section 9.8, such Borrower shall hold such payment in trust for Bank and such payment shall be promptly delivered to Bank for application to the Obligations, whether matured or unmatured.

10 NOTICES

All notices, consents, requests, approvals, demands, or other communication by any party to this Agreement or any other Loan Document must be in writing and shall be deemed to have been validly served, given, or delivered: (a) upon the earlier of actual receipt and three (3) Business Days after deposit in the U.S. mail, first class, registered or certified mail return receipt requested, with proper postage prepaid; (b) upon transmission, when sent by electronic mail or facsimile transmission; (c) one (1) Business Day after deposit with a reputable overnight courier with all charges prepaid; or (d) when delivered, if hand-delivered by messenger, all of which shall be addressed to the party to be notified and sent to the address, facsimile number, or email address indicated below. Bank or Borrower may change its mailing or electronic mail address or facsimile number by giving the other party written notice thereof in accordance with the terms of this Section 10.

If to Borrower: Cancer Genetics, Inc.
201 Route 17 North, 2nd Floor
Rutherford, New Jersey 07070
Attn: John A. Roberts
Title: Chief Operating Officer
Fax: (201) 528-9201
Email: jay.roberts@cgix.com

Gentris, LLC
133 Southcenter Court, Suite 400
Morrisville, North Carolina 27560
Attn: John A. Roberts
Title: Chief Operating Officer
Fax: (201) 528-9201
Email: jay.roberts@cgix.com

with a copy to: Lowenstein Sandler LLP
1 Lowenstein Drive

Roseland, New Jersey 07068
Attn: Alan Wovsaniker, Esquire
Fax: (973) 597-2400
Email: awovsaniker@lowenstein.com

If to Bank: Silicon Valley Bank
275 Grove Street, Suite 2-200
Newton, Massachusetts 02466
Attn: Mr. Sam Subilia
Fax: (617) 527-0177
Email: SSubilia@svb.com

with a copy to: Riemer & Braunstein LLP
Three Center Plaza
Boston, Massachusetts 02108
Attn: David A. Ephraim, Esquire
Fax: (617) 880-3456
Email: DEphraim@riemerlaw.com

11 CHOICE OF LAW, VENUE, AND JURY TRIAL WAIVER

Except as otherwise expressly provided in any of the Loan Documents, New York law governs the Loan Documents without regard to principles of conflicts of law. Borrower and Bank each submit to the exclusive jurisdiction of the State and Federal courts in New York, New York; provided, however, that nothing in this Agreement shall be deemed to operate to preclude Bank from bringing suit or taking other legal action in any other jurisdiction to realize on the Collateral or any other security for the Obligations, or to enforce a judgment or other court order in favor of Bank. Borrower expressly submits and consents in advance to such jurisdiction in any action or suit commenced in any such court, and Borrower hereby waives any objection that it may have based upon lack of personal jurisdiction, improper venue, or forum non conveniens and hereby consents to the granting of such legal or equitable relief as is deemed appropriate by such court. Borrower hereby waives personal service of the summons, complaints, and other process issued in such action or suit and agrees that service of such summons, complaints, and other process may be made by registered or certified mail addressed to Borrower at the address set forth in, or subsequently provided by Borrower in accordance with, Section 10 of this Agreement and that service so made shall be deemed completed upon the earlier to occur of Borrower's actual receipt thereof or three (3) days after deposit in the U.S. mails, proper postage prepaid.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, BORROWER AND BANK EACH WAIVE THEIR RIGHT TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION ARISING OUT OF OR BASED UPON THIS AGREEMENT, THE LOAN DOCUMENTS OR ANY CONTEMPLATED TRANSACTION, INCLUDING CONTRACT, TORT, BREACH OF DUTY AND ALL OTHER CLAIMS. THIS WAIVER IS A MATERIAL INDUCEMENT FOR BOTH PARTIES TO ENTER INTO THIS AGREEMENT. EACH PARTY HAS REVIEWED THIS WAIVER WITH ITS COUNSEL.

This Section 11 shall survive the termination of this Agreement.

12 GENERAL PROVISIONS

12.1 Termination Prior to Revolving Line Maturity Date; Survival. All covenants, representations and warranties made in this Agreement shall continue in full force until this Agreement has terminated pursuant to its terms and all Obligations have been satisfied. So long as Borrower has satisfied the Obligations (other than inchoate indemnity obligations, and any other obligations which, by their terms, are to survive the termination of this Agreement, and any Obligations under Bank Services Agreements that are cash collateralized in accordance with Section 4.1 of this Agreement), this Agreement may be terminated prior to the Revolving Line Maturity Date by Borrower, effective three (3) Business Days after written notice of termination is given to Bank. Those obligations that are expressly

specified in this Agreement as surviving this Agreement's termination shall continue to survive notwithstanding this Agreement's termination.

12.2 Successors and Assigns. This Agreement binds and is for the benefit of the successors and permitted assigns of each party. Borrower may not assign this Agreement or any rights or obligations under it without Bank's prior written consent (which may be granted or withheld in Bank's discretion). Bank has the right, without the consent of or notice to Borrower, to sell, transfer, assign, negotiate, or grant participation in all or any part of, or any interest in, Bank's obligations, rights, and benefits under this Agreement and the other Loan Documents.

12.3 Indemnification. Borrower agrees to indemnify, defend and hold Bank and its directors, officers, employees, agents, attorneys, or any other Person affiliated with or representing Bank (each, an "**Indemnified Person**") harmless against: (i) all obligations, demands, claims, and liabilities (collectively, "**Claims**") claimed or asserted by any other party in connection with the transactions contemplated by the Loan Documents; and (ii) all losses or expenses (including Bank Expenses) in any way suffered, incurred, or paid by such Indemnified Person as a result of, following from, consequential to, or arising from transactions between Bank and Borrower (including reasonable attorneys' fees and expenses), except for Claims and/or losses directly caused by such Indemnified Person's gross negligence or willful misconduct.

This Section 12.3 shall survive until all statutes of limitation with respect to the Claims, losses, and expenses for which indemnity is given shall have run.

12.4 Time of Essence. Time is of the essence for the performance of all Obligations in this Agreement.

12.5 Severability of Provisions. Each provision of this Agreement is severable from every other provision in determining the enforceability of any provision.

12.6 Correction of Loan Documents. Bank may correct patent errors and fill in any blanks in the Loan Documents consistent with the agreement of the parties.

12.7 Amendments in Writing; Waiver; Integration. No purported amendment or modification of any Loan Document, or waiver, discharge or termination of any obligation under any Loan Document, shall be enforceable or admissible unless, and only to the extent, expressly set forth in a writing signed by the party against which enforcement or admission is sought. Without limiting the generality of the foregoing, no oral promise or statement, nor any action, inaction, delay, failure to require performance or course of conduct shall operate as, or evidence, an amendment, supplement or waiver or have any other effect on any Loan Document. Any waiver granted shall be limited to the specific circumstance expressly described in it, and shall not apply to any subsequent or other circumstance, whether similar or dissimilar, or give rise to, or evidence, any obligation or commitment to grant any further waiver. The Loan Documents represent the entire agreement about this subject matter and supersede prior negotiations or agreements. All prior agreements, understandings, representations, warranties, and negotiations between the parties about the subject matter of the Loan Documents merge into the Loan Documents.

12.8 Counterparts. This Agreement may be executed in any number of counterparts and by different parties on separate counterparts, each of which, when executed and delivered, is an original, and all taken together, constitute one Agreement.

12.9 Confidentiality. In handling any confidential information, Bank shall exercise the same degree of care that it exercises for its own proprietary information, but disclosure of information may be made: (a) to Bank's Subsidiaries or Affiliates (such Subsidiaries and Affiliates, together with Bank, collectively, "**Bank Entities**"); (b) to prospective transferees or purchasers of any interest in the Credit Extensions (provided, however, Bank shall its best efforts to obtain any prospective transferee's or purchaser's agreement to the terms of this provision); (c) as required by law, regulation, subpoena, or other order; (d) to Bank's regulators or as otherwise required in connection with Bank's examination or audit; (e) as Bank considers appropriate in exercising remedies under the Loan Documents; and (f) to third-party service providers of Bank so long as such service providers have executed a confidentiality agreement with Bank with terms no less restrictive than those contained herein. Confidential information does not include information

that is either: (i) in the public domain or in Bank's possession when disclosed to Bank, or becomes part of the public domain (other than as a result of its disclosure by Bank in violation of this Agreement) after disclosure to Bank; or (ii) disclosed to Bank by a third party, if Bank does not know that the third party is prohibited from disclosing the information.

Bank Entities may use confidential information for the development of databases, reporting purposes, and market analysis so long as such confidential information is aggregated and anonymized prior to distribution unless otherwise expressly permitted by Borrower. The provisions of the immediately preceding sentence shall survive the termination of this Agreement.

12.10 Electronic Execution of Documents. The words "execution," "signed," "signature" and words of like import in any Loan Document shall be deemed to include electronic signatures or the keeping of records in electronic form, each of which shall be of the same legal effect, validity and enforceability as a manually executed signature or the use of a paper-based recordkeeping systems, as the case may be, to the extent and as provided for in any applicable law, including, without limitation, any state law based on the Uniform Electronic Transactions Act.

12.11 Right of Setoff. Borrower hereby grants to Bank a Lien and a right of setoff as security for all Obligations to Bank, whether now existing or hereafter arising upon and against all deposits, credits, collateral and property, now or hereafter in the possession, custody, safekeeping or control of Bank or any entity under the control of Bank (including a subsidiary of Bank) or in transit to any of them. At any time after the occurrence and during the continuance of an Event of Default, without demand or notice, Bank may setoff the same or any part thereof and apply the same to any liability or Obligation of Borrower even though unmatured and regardless of the adequacy of any other collateral securing the Obligations. ANY AND ALL RIGHTS TO REQUIRE BANK TO EXERCISE ITS RIGHTS OR REMEDIES WITH RESPECT TO ANY OTHER COLLATERAL WHICH SECURES THE OBLIGATIONS, PRIOR TO EXERCISING ITS RIGHT OF SETOFF WITH RESPECT TO SUCH DEPOSITS, CREDITS OR OTHER PROPERTY OF BORROWER, ARE HEREBY KNOWINGLY, VOLUNTARILY AND IRREVOCABLY WAIVED.

12.12 Captions. The headings used in this Agreement are for convenience only and shall not affect the interpretation of this Agreement.

12.13 Construction of Agreement. The parties mutually acknowledge that they and their attorneys have participated in the preparation and negotiation of this Agreement. In cases of uncertainty this Agreement shall be construed without regard to which of the parties caused the uncertainty to exist.

12.14 Relationship. The relationship of the parties to this Agreement is determined solely by the provisions of this Agreement. The parties do not intend to create any agency, partnership, joint venture, trust, fiduciary or other relationship with duties or incidents different from those of parties to an arm's-length contract.

12.15 Third Parties. Nothing in this Agreement, whether express or implied, is intended to: (a) confer any benefits, rights or remedies under or by reason of this Agreement on any persons other than the express parties to it and their respective permitted successors and assigns; (b) relieve or discharge the obligation or liability of any person not an express party to this Agreement; or (c) give any person not an express party to this Agreement any right of subrogation or action against any party to this Agreement.

12.16 Amended and Restated Agreement. This Agreement amends and restates, in its entirety, and replaces, the Prior Loan Agreement. This Agreement is not intended to, and does not, novate the Prior Loan Agreement and Borrower reaffirms that the existing security interest created by the Prior Loan Agreement is and remains in full force and effect.

13 DEFINITIONS

13.1 Definitions. As used in the Loan Documents, the word "shall" is mandatory, the word "may" is permissive, the word "or" is not exclusive, the words "includes" and "including" are not limiting, the singular includes

the plural, and numbers denoting amounts that are set off in brackets are negative. As used in this Agreement, the following capitalized terms have the following meanings:

"**Account**" is any "account" as defined in the Code with such additions to such term as may hereafter be made, and includes, without limitation, all accounts receivable and other sums owing to Borrower.

"**Account Debtor**" is any "account debtor" as defined in the Code with such additions to such term as may hereafter be made.

"**Adjusted EBITDA**" shall mean, calculated on a consolidated basis with respect to Borrower and its Subsidiaries, (a) Net Income, plus (b) to the extent deducted in the calculation of Net Income, (i) Interest Expense, (ii) depreciation and amortization expense, (iii) income tax expense, (iv) non-cash stock compensation expense, (v) restructuring and severance costs not exceeding Two Hundred Thousand Dollars ($200,000.00) in the aggregate in any fiscal year of Borrower, and (vi) without duplication of (v), severance costs not exceeding One Hundred Ninety Thousand Dollars ($190,000.00) in the aggregate during the first (1st) quarter of Borrower's 2017 fiscal year, minus (c) unfinanced capital expenditures, all as determined in accordance with GAAP.

"**Adjusted Quick Ratio**" means, calculated with respect to Borrower only, and not on a consolidated basis, the ratio of Quick Assets to Current Liabilities minus the current portion of Deferred Revenue.

"**Advance**" or "**Advances**" means a revolving credit loan (or revolving credit loans) under the Revolving Line.

"**Affiliate**" is, with respect to any Person, each other Person that owns or controls directly or indirectly the Person, any Person that controls or is controlled by or is under common control with the Person, and each of that Person's senior executive officers, directors, partners and, for any Person that is a limited liability company, that Person's managers and members.

"**Anniversary Fee**" is defined in Section 2.5(b).

"**Agreement**" is defined in the preamble hereof.

"**Authorized Signer**" is any individual listed in Borrower's Borrowing Resolution who is authorized to execute the Loan Documents, including making (and executing if applicable) any Credit Extension request, on behalf of Borrower.

"**Availability Amount**" is (a) the lesser of (i) the Revolving Line or (ii) the amount available under the Borrowing Base minus (b) the outstanding principal balance of any Advances.

"**Average Monthly Collection Amount**" is, as of any date of determination, the aggregate amount of payments under Third-Party Accounts collected by Borrower during the immediately preceding calendar quarter, divided by three (3), which amount shall be adjusted on a quarterly basis.

"**Bank**" is defined in the preamble hereof.

"**Bank Entities**" is defined in Section 12.9.

"**Bank Expenses**" are all audit fees and expenses, costs, and expenses (including reasonable attorneys' fees and expenses) for preparing, amending, negotiating, administering, defending and enforcing the Loan Documents (including, without limitation, those incurred in connection with appeals or Insolvency Proceedings) or otherwise incurred with respect to Borrower or any Guarantor.

"**Bank Services**" are any products, credit services, and/or financial accommodations previously, now, or hereafter provided to Borrower or any of its Subsidiaries by Bank or any Bank Affiliate, including, without limitation,

any letters of credit, cash management services (including, without limitation, merchant services, direct deposit of payroll, business credit cards, and check cashing services), interest rate swap arrangements, and foreign exchange services as any such products or services may be identified in Bank's various agreements related thereto (each, a "**Bank Services Agreement**").

"**Bank Services Agreement**" is defined in the definition of Bank Services.

"**BioServe India**" means BioServe Biotechnologies (India) Pvt. Ltd., a company organized under the laws of India and a Subsidiary of CGI India.

"**Board**" means Borrower's board of directors.

"**Borrower**" is defined in the preamble hereof.

"**Borrower's Books**" are all Borrower's books and records including ledgers, federal and state tax returns, records regarding Borrower's assets or liabilities, the Collateral, business operations or financial condition, and all computer programs or storage or any equipment containing such information.

"**Borrowing Base**" is (a) eighty percent (80.0%) of Eligible Accounts plus, without duplication, (b) the lesser of (i) fifty percent (50.0%) of the value of Borrower's Net Collectable Value or (ii) three (3) times the Average Monthly Collection Amount, each as determined by Bank from Borrower's most recent Borrowing Base Report (and as may subsequently be updated by Bank in Bank's sole discretion based upon information received by Bank including, without limitation, Accounts that are paid and/or billed following the date of the Borrowing Base Report); provided, however, that Bank has the right to decrease the foregoing amounts and percentages in its good faith business judgment to mitigate the impact of events, conditions, contingencies, or risks which may adversely affect the Collateral or its value.

"**Borrowing Resolutions**" are, with respect to any Person, those resolutions adopted by such Person's board of directors (or the limited liability company equivalent thereof) and, if required under the terms of such Person's Operating Documents, stockholders, or other equity holders, and delivered by such Person to Bank approving the Loan Documents to which such Person is a party and the transactions contemplated thereby, together with a certificate executed by its secretary or manager (as applicable and appropriate) on behalf of such Person certifying (a) such Person has the authority to execute, deliver, and perform its obligations under each of the Loan Documents to which it is a party, (b) that set forth as a part of or attached as an exhibit to such certificate is a true, correct, and complete copy of the resolutions then in full force and effect authorizing and ratifying the execution, delivery, and performance by such Person of the Loan Documents to which it is a party, (c) the name(s) of the Person(s) authorized to execute the Loan Documents, including making (and executing if applicable) any Credit Extension request, on behalf of such Person, together with a sample of the true signature(s) of such Person(s), and (d) that Bank may conclusively rely on such certificate unless and until such Person shall have delivered to Bank a further certificate canceling or amending such prior certificate.

"**Business Day**" is any day that is not a Saturday, Sunday or a day on which Bank is closed.

"**Cash Collateral Account**" is defined in Section 6.3(c).

"**Cash Equivalents**" means (a) marketable direct obligations issued or unconditionally guaranteed by the United States or any agency or any State thereof having maturities of not more than one (1) year from the date of acquisition; (b) commercial paper maturing no more than one (1) year after its creation and having the highest rating from either Standard & Poor's Ratings Group or Moody's Investors Service, Inc.; and (c) Bank's certificates of deposit issued maturing no more than one (1) year after issue.

"**Change in Control**" means (a) at any time, any "person" or "group" (as such terms are used in Sections 13(d) and 14(d) of the Exchange Act), shall become, or obtain rights (whether by means of warrants, options or otherwise) to become, the "beneficial owner" (as defined in Rules 13(d)-3 and 13(d)-5 under the Exchange Act), directly or indirectly, of forty-nine percent (49.0%) or more of the ordinary voting power for the election of directors of Borrower

(determined on a fully diluted basis) other than by the sale of Borrower's equity securities in a public offering or to venture capital or private equity investors so long as Borrower identifies to Bank the venture capital or private equity investors at least seven (7) Business Days prior to the closing of the transaction and provides to Bank a description of the material terms of the transaction; (b) during any period of twelve (12) consecutive months, a majority of the members of the board of directors or other equivalent governing body of Borrower cease to be composed of individuals (i) who were members of that board or equivalent governing body on the first day of such period, (ii) whose election or nomination to that board or equivalent governing body was approved by individuals referred to in clause (i) above constituting at the time of such election or nomination at least a majority of that board or equivalent governing body or (iii) whose election or nomination to that board or other equivalent governing body was approved by individuals referred to in clauses (i) and (ii) above constituting at the time of such election or nomination at least a majority of that board or equivalent governing body; or (c) at any time, Borrower shall cease to own and control, of record and beneficially, directly or indirectly, one hundred percent (100.0%) of each class of outstanding capital stock of each Subsidiary of Borrower free and clear of all Liens (except Liens created by this Agreement).

"**CD Accounts**" is defined in Section 6.8(a).

"**CGI China**" means, individually and collectively, Gentris Hong Kong Limited and Gentris Shanghai Pharma Science & Technology Co. Ltd.

"**CGI India**" means Cancer Genetics (India) Pvt. Ltd., a company organized under the laws of India and a Subsidiary of Parent.

"**CGI Italia**" means Cancer Genetics Italia S.r.l., a company organized under the laws of Italy and a Subsidiary of Parent.

"**Chase Accounts**" is defined in Section 6.8(a).

"**Claims**" is defined in Section 12.3.

"**Code**" is the Uniform Commercial Code, as the same may, from time to time, be enacted and in effect in the State of New York; provided, that, to the extent that the Code is used to define any term herein or in any Loan Document and such term is defined differently in different Articles or Divisions of the Code, the definition of such term contained in Article or Division 9 shall govern; provided further, that in the event that, by reason of mandatory provisions of law, any or all of the attachment, perfection, or priority of, or remedies with respect to, Bank's Lien on any Collateral is governed by the Uniform Commercial Code in effect in a jurisdiction other than the State of New York, the term "Code" shall mean the Uniform Commercial Code as enacted and in effect in such other jurisdiction solely for purposes of the provisions thereof relating to such attachment, perfection, priority, or remedies and for purposes of definitions relating to such provisions.

"**Collateral**" is any and all properties, rights and assets of Borrower described on Exhibit A.

"**Collateral Account**" is any Deposit Account, Securities Account, or Commodity Account.

"**Commodity Account**" is any "commodity account" as defined in the Code with such additions to such term as may hereafter be made.

"**Compliance Certificate**" is that certain certificate in the form attached hereto as Exhibit B.

"**Contingent Obligation**" is, for any Person, any direct or indirect liability, contingent or not, of that Person for (a) any indebtedness, lease, dividend, letter of credit or other obligation of another such as an obligation, in each case, directly or indirectly guaranteed, endorsed, co-made, discounted or sold with recourse by that Person, or for which that Person is directly or indirectly liable; (b) any obligations for undrawn letters of credit for the account of that Person; and (c) all obligations from any interest rate, currency or commodity swap agreement, interest rate cap or collar agreement, or other agreement or arrangement designated to protect a Person against fluctuation in interest rates,

currency exchange rates or commodity prices; but "Contingent Obligation" does not include endorsements in the ordinary course of business. The amount of a Contingent Obligation is the stated or determined amount of the primary obligation for which the Contingent Obligation is made or, if not determinable, the maximum reasonably anticipated liability for it determined by the Person in good faith; but the amount may not exceed the maximum of the obligations under any guarantee or other support arrangement.

"**Control Agreement**" is any control agreement entered into among the depository institution at which Borrower maintains a Deposit Account or the securities intermediary or commodity intermediary at which Borrower maintains a Securities Account or a Commodity Account, Borrower, and Bank pursuant to which Bank obtains control (within the meaning of the Code) over such Deposit Account, Securities Account, or Commodity Account.

"**Copyrights**" are any and all copyright rights, copyright applications, copyright registrations and like protections in each work of authorship and derivative work thereof, whether published or unpublished and whether or not the same also constitutes a trade secret.

"**Credit Extension**" is any Advance, any Overadvance, or any other extension of credit by Bank for Borrower's benefit.

"**Current Liabilities**" are all obligations and liabilities of Borrower to Bank, plus, without duplication, the aggregate amount of Borrower's Total Liabilities that mature within one (1) year.

"**Default Rate**" is defined in Section 2.4(b).

"**Deferred Revenue**" is all amounts received or invoiced in advance of performance under contracts and not yet recognized as revenue.

"**Delaware Subsidiary**" is defined in the preamble hereof.

"**Deposit Account**" is any "deposit account" as defined in the Code with such additions to such term as may hereafter be made.

"**Designated Deposit Account**" is account number ending in [____] (last three digits), maintained by Borrower with Bank (provided, however, if no such account number is included, then the Designated Deposit Account shall be any deposit account of Borrower maintained with Bank as chosen by Bank).

"**Dollars**," "**dollars**" or use of the sign "**$**" means only lawful money of the United States and not any other currency, regardless of whether that currency uses the "$" sign to denote its currency or may be readily converted into lawful money of the United States.

"**Dollar Equivalent**" is, at any time, (a) with respect to any amount denominated in Dollars, such amount, and (b) with respect to any amount denominated in a Foreign Currency, the equivalent amount therefor in Dollars as determined by Bank at such time on the basis of the then-prevailing rate of exchange in San Francisco, California, for sales of the Foreign Currency for transfer to the country issuing such Foreign Currency.

"**Effective Date**" is defined in the preamble hereof.

"**Eligible Accounts**" means Accounts which arise in the ordinary course of Borrower's business that meet all Borrower's representations and warranties in Section 5.3, that have been, at the option of Bank, confirmed in accordance with Section 6.3(f) of this Agreement, and are due and owing from Account Debtors deemed creditworthy by Bank in its sole discretion. Bank reserves the right, at any time after the Effective Date, in its sole discretion in each instance, to either (i) adjust any of the criteria set forth below and to establish new criteria or (ii) deem any Accounts owing from a particular Account Debtor or Account Debtors to not meet the criteria to be Eligible Accounts. Unless Bank otherwise agrees in writing, Eligible Accounts shall not include

(a) Accounts for which the Account Debtor is Borrower's Affiliate, officer, employee, or agent, and Accounts that are intercompany Accounts;

(b) Accounts that the Account Debtor has not paid within one hundred twenty (120) days of invoice date regardless of invoice payment period terms;

(c) Accounts with credit balances over one hundred twenty (120) days from invoice date;

(d) Accounts owing from an Account Debtor if fifty percent (50%) or more of the Accounts owing from such Account Debtor have not been paid within one hundred twenty (120) days of invoice date;

(e) Accounts owing from an Account Debtor which does not have its principal place of business in the United States or Canada (except for Eligible Foreign Accounts);

(f) Accounts billed from and/or payable to Borrower outside of the United States (sometimes called foreign invoiced accounts);

(g) Accounts owing from an Account Debtor to the extent that Borrower is indebted or obligated in any manner to the Account Debtor (as creditor, lessor, supplier or otherwise - sometimes called "contra" accounts, accounts payable, customer deposits or credit accounts);

(h) Accounts owing from an Account Debtor which is a United States government entity or any department, agency, or instrumentality thereof unless Borrower has assigned its payment rights to Bank and the assignment has been acknowledged under the Federal Assignment of Claims Act of 1940, as amended;

(i) Accounts for demonstration or promotional equipment, or in which goods are consigned, or sold on a "sale guaranteed", "sale or return", "sale on approval", or other terms if Account Debtor's payment may be conditional;

(j) Accounts owing from an Account Debtor where goods or services have not yet been rendered to the Account Debtor (sometimes called memo billings or pre-billings);

(k) Accounts subject to contractual arrangements between Borrower and an Account Debtor where payments shall be scheduled or due according to completion or fulfillment requirements (sometimes called contracts accounts receivable, progress billings, milestone billings, or fulfillment contracts);

(l) Accounts owing from an Account Debtor the amount of which may be subject to withholding based on the Account Debtor's satisfaction of Borrower's complete performance (but only to the extent of the amount withheld; sometimes called retainage billings);

(m) Accounts subject to trust provisions, subrogation rights of a bonding company, or a statutory trust;

(n) Accounts owing from an Account Debtor that has been invoiced for goods that have not been shipped to the Account Debtor unless Bank, Borrower, and the Account Debtor have entered into an agreement acceptable to Bank wherein the Account Debtor acknowledges that (i) it has title to and has ownership of the goods wherever located, (ii) a bona fide sale of the goods has occurred, and (iii) it owes payment for such goods in accordance with invoices from Borrower (sometimes called "bill and hold" accounts);

(o) Accounts for which the Account Debtor has not been invoiced;

(p) Accounts that represent non-trade receivables or that are derived by means other than in the ordinary course of Borrower's business;

(q) Accounts for which Borrower has permitted Account Debtor's payment to extend beyond one hundred twenty (120) days (including Accounts with a due date that is more than one hundred twenty (120) days from invoice date);

(r) Accounts arising from chargebacks, debit memos or other payment deductions taken by an Account Debtor;

(s) Accounts arising from product returns and/or exchanges (sometimes called "warranty" or "RMA" accounts);

(t) Accounts in which the Account Debtor disputes liability or makes any claim (but only up to the disputed or claimed amount), or if the Account Debtor is subject to an Insolvency Proceeding, or becomes insolvent, or goes out of business;

(u) Accounts owing from an Account Debtor with respect to which Borrower has received Deferred Revenue (but only to the extent of such Deferred Revenue), except for Deferred Revenue related to upfront storage fees;

(v) Accounts owing from an Account Debtor, whose total obligations to Borrower exceed twenty-five percent (25.0%) of all Accounts, except for Merck & Co. Inc. and Gilead Sciences, Inc., for which such percentage is thirty-five percent (35.0%), for the amounts that exceed that percentage, unless Bank approves in writing; and

(w) Accounts for which Bank in its good faith business judgment determines collection to be doubtful, including, without limitation, accounts represented by "refreshed" or "recycled" invoices.

"**Eligible Foreign Accounts**" means Accounts which are billed from and/or payable to Borrower in the United States, but are owing from an Account Debtor which does not have its principal place of business in the United States or Canada, but are otherwise Eligible Accounts; provided, however, at no time shall the portion of Advances based upon the Eligible Foreign Accounts exceed twenty-five percent (25.0%) of the Borrowing Base. For the avoidance of doubt, Eligible Foreign Accounts shall include Novartis AG, Reckitt Benckiser Group Plc., and Alkermes Plc.

"**Equipment**" is all "equipment" as defined in the Code with such additions to such term as may hereafter be made, and includes without limitation all machinery, fixtures, goods, vehicles (including motor vehicles and trailers), and any interest in any of the foregoing.

"**ERISA**" is the Employee Retirement Income Security Act of 1974, and its regulations.

"**Event of Default**" is defined in Section 8.

"**Exchange Act**" is the Securities Exchange Act of 1934, as amended.

"**Foreign Currency**" means lawful money of a country other than the United States.

"**Foreign Subsidiary**" means each of CGI China, CGI India and CGI Italia.

"**Funding Date**" is any date on which a Credit Extension is made to or for the account of Borrower which shall be a Business Day.

"**FX Contract**" is any foreign exchange contract by and between Borrower and Bank under which Borrower commits to purchase from or sell to Bank a specific amount of Foreign Currency on a specified date.

"**GAAP**" is generally accepted accounting principles set forth in the opinions and pronouncements of the Accounting Principles Board of the American Institute of Certified Public Accountants and statements and pronouncements of the Financial Accounting Standards Board or in such other statements by such other Person as may be approved by a significant segment of the accounting profession, which are applicable to the circumstances as of the date of determination.

"**General Intangibles**" is all "general intangibles" as defined in the Code in effect on the date hereof with such additions to such term as may hereafter be made, and includes without limitation, all Intellectual Property, claims, income and other tax refunds, security and other deposits, payment intangibles, contract rights, options to purchase or sell real or personal property, rights in all litigation presently or hereafter pending (whether in contract, tort or otherwise), insurance policies (including without limitation key man, property damage, and business interruption insurance), payments of insurance and rights to payment of any kind.

"**Governmental Approval**" is any consent, authorization, approval, order, license, franchise, permit, certificate, accreditation, registration, filing or notice, of, issued by, from or to, or other act by or in respect of, any Governmental Authority.

"**Governmental Authority**" is any nation or government, any state or other political subdivision thereof, any agency, authority, instrumentality, regulatory body, court, central bank or other entity exercising executive, legislative, judicial, taxing, regulatory or administrative functions of or pertaining to government, any securities exchange and any self-regulatory organization.

"**Guarantor**" is any Person providing a Guaranty in favor of Bank.

"**Guaranty**" is any guarantee of all or any part of the Obligations, as the same may from time to time be amended, restated, modified or otherwise supplemented.

"**Indebtedness**" is (a) indebtedness for borrowed money or the deferred price of property or services, such as reimbursement and other obligations for surety bonds and letters of credit, (b) obligations evidenced by notes, bonds, debentures or similar instruments, (c) capital lease obligations, and (d) Contingent Obligations.

"**Indemnified Person**" is defined in Section 12.3.

"**Initial Audit**" is Bank's inspection of Borrower's Accounts, the Collateral, and Borrower's Books, with results satisfactory to Bank in its sole and absolute discretion.

"**Insolvency Proceeding**" is any proceeding by or against any Person under the United States Bankruptcy Code, or any other bankruptcy or insolvency law, including assignments for the benefit of creditors, compositions, extensions generally with its creditors, or proceedings seeking reorganization, arrangement, or other relief.

"**Intellectual Property**" means, with respect to any Person, all of such Person's right, title, and interest in and to the following:

(a) its Copyrights, Trademarks and Patents;

(b) any and all trade secrets and trade secret rights, including, without limitation, any rights to unpatented inventions, know-how and operating manuals;

(c) any and all source code;

(d) any and all design rights which may be available to such Person;

(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 the Copyrights, Trademarks or Patents.

"**Interest Expense**" means for any fiscal period, calculated on a consolidated basis with respect to Borrower and its Subsidiaries, interest expense (whether cash or non-cash) determined in accordance with GAAP for the relevant period ending on such date, including, in any event, interest expense with respect to any Credit Extension and other Indebtedness of Borrower and its Subsidiaries, including, without limitation or duplication, all commissions, discounts, or related amortization and other fees and charges with respect to letters of credit and bankers' acceptance financing and the net costs associated with interest rate swap, cap, and similar arrangements, and the interest portion of any deferred payment obligation (including leases of all types).

"**Inventory**" is all "inventory" as defined in the Code in effect on the date hereof with such additions to such term as may hereafter be made, and includes without limitation all merchandise, raw materials, parts, supplies, packing and shipping materials, work in process and finished products, including without limitation such inventory as is temporarily out of Borrower's custody or possession or in transit and including any returned goods and any documents of title representing any of the above.

"**Investment**" is any beneficial ownership interest in any Person (including stock, partnership interest or other securities), and any loan, advance or capital contribution to any Person.

"**IP Agreement** " is, collectively, (i) that certain Intellectual Property Security Agreement dated as of the Effective Date by and between Parent and Bank and (ii) that certain Intellectual Property Security Agreement dated as of the Effective Date by and between Delaware Subsidiary and Bank, as each may be amended, modified or restated from time to time.

"**Key Person**" is each of Borrower's (a) Chief Executive Officer, who is Panna Sharma as of the Effective Date, and (b) Chief Operating Officer, who is John A. Roberts as of the Effective Date.

"**Letter of Credit**" is a standby or commercial letter of credit issued by Bank upon request of Borrower based upon an application, guarantee, indemnity, or similar agreement.

"**Lien**" is a claim, mortgage, deed of trust, levy, charge, pledge, security interest or other encumbrance of any kind, whether voluntarily incurred or arising by operation of law or otherwise against any property.

"**Liquidity**" is, at any time, calculated with respect to Borrower only, and not on a consolidated basis, the sum of (a) the aggregate amount of unrestricted and unencumbered cash held at such time by Borrower in accounts maintained with Bank and (b) the Availability Amount.

"**Loan Documents**" are, collectively, this Agreement and any schedules, exhibits, certificates, notices, and any other documents related to this Agreement, the Perfection Certificate, the Subordination Agreement, the IP Agreement, any Bank Services Agreement, any subordination agreement, any note, or notes or guaranties executed by Borrower or any Guarantor, and any other present or future agreement by Borrower and/or any Guarantor with or for the benefit of Bank in connection with this Agreement or Bank Services, all as amended, restated, or otherwise modified.

"**Material Adverse Change**" is (a) a material impairment in the perfection or priority of Bank's Lien in the Collateral or in the value of such Collateral; (b) a material adverse change in the business, operations, or condition (financial or otherwise) of Borrower; (c) a material impairment of the prospect of repayment of any portion of the Obligations; or (d) Bank determines, based upon information available to it and in its reasonable judgment, that there is a substantial likelihood that Borrower shall fail to comply with one or more of the financial covenants in Section 6 during the next succeeding financial reporting period.

"**Monthly Financial Statements**" is defined in Section 6.2(c).

"**Net Collectable Value**" is the value of the Third-Party Accounts (but in all cases excluding Eligible Accounts), minus bad debt allowances, contra allowances and other standard ineligibles, as determined by Bank in its sole discretion on a case-by-case basis.

"**Net Income**" means, as calculated on a consolidated basis for Borrower and its Subsidiaries for any period as at any date of determination, the net profit (or loss), after provision for taxes, of Borrower and its Subsidiaries for such period taken as a single accounting period.

"**Obligations**" are Borrower's obligations to pay when due any debts, principal, interest, fees, Bank Expenses, the Anniversary Fee, the Unused Revolving Line Facility Fee, and other amounts Borrower owes Bank now or later, whether under this Agreement, the other Loan Documents, or otherwise, including, without limitation, any interest

accruing after Insolvency Proceedings begin and debts, liabilities, or obligations of Borrower assigned to Bank, and to perform Borrower's duties under the Loan Documents.

"**Operating Documents**" are, for any Person, such Person's formation documents, as certified by the Secretary of State (or equivalent agency) of such Person's jurisdiction of organization on a date that is no earlier than thirty (30) days prior to the Effective Date, and, (a) if such Person is a corporation, its bylaws in current form, (b) if such Person is a limited liability company, its limited liability company agreement (or similar agreement), and (c) if such Person is a partnership, its partnership agreement (or similar agreement), each of the foregoing with all current amendments or modifications thereto.

"**Overadvance**" is defined in Section 2.3.

"**Parent**" is defined in the preamble hereof.

"**Patents**" means all patents, patent applications and like protections including without limitation improvements, divisions, continuations, renewals, reissues, extensions and continuations-in-part of the same.

"**Payment Date**" means the last calendar day of each month.

"**Perfection Certificate**" is defined in Section 5.1.

"**Permitted Indebtedness**" is:

(a) Borrower's Indebtedness to Bank under this Agreement and the other Loan Documents;

(b) Indebtedness existing on the Effective Date which is shown on the Perfection Certificate;

(c) Subordinated Debt;

(d) unsecured Indebtedness to trade creditors incurred in the ordinary course of business;

(e) Indebtedness incurred as a result of endorsing negotiable instruments received in the ordinary course of business;

(f) Indebtedness secured by Liens permitted under clauses (a) and (c) of the definition of "Permitted Liens" hereunder;

(g) subject to the execution of a subordination agreement, in form and substance acceptable to Bank, in its sole and absolute discretion, Borrower's Indebtedness to PFG pursuant to the terms and conditions of the PFG Loan Agreement in an original principal amount not to exceed Six Million Dollars ($6,000,000.00) plus interest thereon; provided, however, that such permitted amount shall reduce on a dollar-for-dollar basis as such Indebtedness is repaid or otherwise satisfied; and

(h) extensions, refinancings, modifications, amendments and restatements of any items of Permitted Indebtedness (a) through (g) above, provided that the principal amount thereof is not increased or the terms thereof are not modified to impose more burdensome terms upon Borrower or its Subsidiary, as the case may be.

"**Permitted Investments**" are:

(a) Investments (including, without limitation, Subsidiaries) existing on the Effective Date which are shown on the Perfection Certificate;

(b) Investments consisting of Cash Equivalents;

(c) Investments not exceeding Five Hundred Thousand Dollars ($500,000.00) in the aggregate in any fiscal year in Oncospire;

(d) Investments consisting of the CD Accounts; and

(e) Investments by Borrower in BioServe India, CGI India, CGI Italia and CGI China not to exceed Seven Hundred Fifty Thousand Dollars ($750,000.00) in the aggregate for any rolling four (4) quarter period, provided no Event of Default exists and no Event of Default would result from such Investment.

"**Permitted Liens**" are:

(a) Liens existing on the Effective Date which are shown on the Perfection Certificate or arising under this Agreement or the other Loan Documents;

(b) Liens for taxes, fees, assessments or other government charges or levies, either (i) not due and payable or (ii) being contested in good faith and for which Borrower maintains adequate reserves on Borrower's Books, provided that no notice of any such Lien has been filed or recorded under the Internal Revenue Code of 1986, as amended, and the Treasury Regulations adopted thereunder;

(c) purchase money Liens or capital leases (i) on Equipment acquired or held by Borrower incurred for financing the acquisition of the Equipment securing no more than Five Hundred Thousand Dollars ($500,000.00) in the aggregate amount outstanding, or (ii) existing on Equipment when acquired, if the Lien is confined to the property and improvements and the proceeds of the Equipment;

(d) Liens in favor of PFG which are subordinated to Bank pursuant to the Subordination Agreement; provided, however, that such Liens are only permitted to the extent that they are on property in which Bank has a first priority perfected security interest;

(e) Liens of carriers, warehousemen, suppliers, or other Persons that are possessory in nature arising in the ordinary course of business so long as such Liens attach only to Inventory, securing liabilities in the aggregate amount not to exceed Fifty Thousand Dollars ($50,000.00) and which are not delinquent or remain payable without penalty or which are being contested in good faith and by appropriate proceedings which proceedings have the effect of preventing the forfeiture or sale of the property subject thereto;

(f) Liens to secure payment of workers' compensation, employment insurance, old-age pensions, social security and other like obligations incurred in the ordinary course of business (other than Liens imposed by ERISA);

(g) non-exclusive licenses, joint ventures, and corporate collaborations of Intellectual Property granted to third parties in the ordinary course of business; and

(h) Liens incurred in the extension, renewal or refinancing of the Indebtedness secured by Liens described in (a) through (c), but any extension, renewal or replacement Lien must be limited to the property encumbered by the existing Lien and the principal amount of the indebtedness may not increase.

"**Person**" is any individual, sole proprietorship, partnership, limited liability company, joint venture, company, trust, unincorporated organization, association, corporation, institution, public benefit corporation, firm, joint stock company, estate, entity or government agency.

"**PFG**" means Partners for Growth IV, L.P., a Delaware limited partnership.

"**PFG Loan Agreement**" means that certain Loan and Security Agreement dated as of March 22, 2017, between Borrower and PFG, as in effect on the Effective Date or as modified with the written consent of Bank.

"**Prime Rate**" is the rate of interest per annum from time to time published in the money rates section of The Wall Street Journal or any successor publication thereto as the "prime rate" then in effect; provided that, in the event such rate of interest is less than zero, such rate shall be deemed to be zero for purposes of this Agreement; and provided further that if such rate of interest, as set forth from time to time in the money rates section of The Wall Street Journal, becomes unavailable for any reason as determined by Bank, the "Prime Rate" shall mean the rate of interest per annum announced by Bank as its prime rate in effect at its principal office in the State of California (such Bank announced Prime Rate not being intended to be the lowest rate of interest charged by Bank in connection with extensions of credit to debtors); provided that, in the event such rate of interest is less than zero, such rate shall be deemed to be zero for purposes of this Agreement.

"**Quick Assets**" is, on any date, Borrower's unrestricted and unencumbered cash and Cash Equivalents maintained with Bank plus net billed accounts receivable, determined according to GAAP.

"**Regions Account**" is defined in Section 6.8(a).

"**Registered Organization**" is any "registered organization" as defined in the Code with such additions to such term as may hereafter be made.

"**Requirement of Law**" is as to any Person, the organizational or governing documents of such Person, and any law (statutory or common), treaty, rule or regulation or determination of an arbitrator or a court or other Governmental Authority, in each case applicable to or binding upon such Person or any of its property or to which such Person or any of its property is subject.

"**Reserves**" means, as of any date of determination, such amounts as Bank may from time to time establish and revise in its good faith business judgment, reducing the amount of Advances and other financial accommodations which would otherwise be available to Borrower (a) to reflect events, conditions, contingencies or risks which, as determined by Bank in its good faith business judgment, do or may adversely affect (i) the Collateral or any other property which is security for the Obligations or its value (including without limitation any increase in delinquencies of Accounts), (ii) the assets, business or prospects of Borrower or any Guarantor, or (iii) the security interests and other rights of Bank in the Collateral (including the enforceability, perfection and priority thereof); or (b) to reflect Bank's reasonable belief that any collateral report or financial information furnished by or on behalf of Borrower or any Guarantor to Bank is or may have been incomplete, inaccurate or misleading in any material respect; or (c) in respect of any state of facts which Bank determines constitutes an Event of Default or may, with notice or passage of time or both, constitute an Event of Default.

"**Responsible Officer**" is any of the Chief Executive Officer, Chief Operating Officer and Chief Administrative Officer of Borrower.

"**Restricted License**" is any material license or other agreement with respect to which Borrower is the licensee (a) that prohibits or otherwise restricts Borrower from granting a security interest in Borrower's interest in such license or agreement or any other property, or (b) for which a default under or termination of could interfere with Bank's right to sell any Collateral.

"**Revolving Line**" is an aggregate principal amount equal to Six Million Dollars ($6,000,000.00).

"**Revolving Line Maturity Date**" is March 22, 2019 [*two years from Effective Date – to be completed at closing*].

"**SEC**" shall mean the Securities and Exchange Commission, any successor thereto, and any analogous Governmental Authority.

"**Securities Account**" is any "securities account" as defined in the Code with such additions to such term as may hereafter be made.

"**Streamline Period**" is, on and after the Effective Date, provided no Event of Default has occurred and is continuing, the period (a) commencing on the first day of the month following the day that Borrower provides to Bank a written report that Borrower has, for each consecutive day in the immediately preceding month maintained an Adjusted Quick Ratio, as determined by Bank in its sole discretion, of at least 1.50 to 1.0 (the "**Threshold Amount**") and (b) terminating on the earlier to occur of (i) the occurrence of an Event of Default, or (ii) the first day thereafter in which Borrower fails to maintain the Threshold Amount on any day, as determined by Bank in its sole discretion. Upon the termination of a Streamline Period, Borrower must maintain the Threshold Amount each consecutive day for two (2) consecutive months as determined by Bank in its sole discretion, prior to entering into a subsequent Streamline Period. Borrower shall give Bank prior written notice of Borrower's election to enter into any such Streamline Period, and

each such Streamline Period shall commence on the first day of the monthly period following the date Bank determines, in its sole discretion, that the Threshold Amount has been achieved.

"**Subordinated Debt**" is indebtedness incurred by Borrower subordinated to all of Borrower's now or hereafter indebtedness to Bank (pursuant to a subordination, intercreditor, or other similar agreement in form and substance satisfactory to Bank entered into between Bank and the other creditor), on terms acceptable to Bank.

"**Subordination Agreement**" is that certain subordination agreement by and between PFG and Bank dated as of March 22, 2017, as amended, restated, amended and restated, supplemented or otherwise modified from time to time.

"**Subsidiary**" is, as to any Person, a corporation, partnership, limited liability company or other entity of which shares of stock or other ownership interests having ordinary voting power (other than stock or such other ownership interests having such power only by reason of the happening of a contingency) to elect a majority of the board of directors or other managers of such corporation, partnership or other entity are at the time owned, or the management of which is otherwise controlled, directly or indirectly through one or more intermediaries, or both, by such Person. Unless the context otherwise requires, each reference to a Subsidiary herein shall be a reference to a Subsidiary of Borrower or Guarantor.

"**Temporary Accounts**" is defined in Section 6.8(a).

"**Third-Party Accounts**" means Accounts which are payable by third party payors and which, except for clauses (b) and (h) of the definition of Eligible Accounts, are otherwise Eligible Accounts.

"**Threshold Amount**" is defined in the definition of Streamline Period.

"**Total Liabilities**" is on any day, obligations that should, under GAAP, be classified as liabilities on Borrower's balance sheet, including all Indebtedness.

"**Trademarks**" means any trademark and servicemark rights, whether registered or not, applications to register and registrations of the same and like protections, and the entire goodwill of the business of Borrower connected with and symbolized by such trademarks.

"**Transfer**" is defined in Section 7.1.

"**Transition Period**" is the period of time commencing on the Effective Date and continuing through the earlier to occur of (a) [_____], 2017 [*120 days following the Effective Date – to be completed at closing*] or (b) an Event of Default.

"**Unused Revolving Line Facility Fee**" is defined in Section 2.7(d).

[Signature page follows.]

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the Effective Date.

BORROWER:

CANCER GENETICS, INC.

By /s/ John A. Roberts
Name: John A. Roberts
Title: Chief Operating Officer and Executive Vice President, Finance

GENTRIS, LLC

By /s/ John A. Roberts
Name: John A. Roberts
Title: Chief Operating Officer and Executive Vice President, Finance

BANK:

SILICON VALLEY BANK

By /s/ Sam Subilia
Name: Sam Subilia
Title: Vice President, Structured Finance - Life Science and Healthcare

EXHIBIT A – COLLATERAL DESCRIPTION

The Collateral consists of all of Borrower's right, title and interest in and to the following personal property:

All goods, Accounts (including health-care receivables), Equipment, Inventory, contract rights or rights to payment of money, leases, license agreements, franchise agreements, General Intangibles, Intellectual Property, commercial tort claims, documents, instruments (including any promissory notes), chattel paper (whether tangible or electronic), cash, deposit accounts, certificates of deposit, fixtures, letters of credit rights (whether or not the letter of credit is evidenced by a writing), securities, and all other investment property, supporting obligations, and financial assets, whether now owned or hereafter acquired, wherever located; and

all Borrower's Books relating to the foregoing, and any and all claims, rights and interests in any of the above and all substitutions for, additions, attachments, accessories, accessions and improvements to and replacements, products, proceeds and insurance proceeds of any or all of the foregoing.

Notwithstanding the foregoing, the Collateral does not include any of the following: (a) more than sixty-five percent (65%) of the presently existing and hereafter arising issued and outstanding shares of capital stock owned by Borrower of any Foreign Subsidiary which shares entitle the holder thereof to vote for directors or any other matter, (b) any security deposits provided to landlords in the ordinary course of business, (c) the CD Accounts, or (c) motor vehicles.

EXHIBIT B

COMPLIANCE CERTIFICATE

TO: SILICON VALLEY BANK Date: _____
FROM: CANCER GENETICS, INC. AND GENTRIS, LLC

The undersigned authorized officer of CANCER GENETICS, INC. AND GENTRIS, LLC (" **Borrower**") certifies that under the terms and conditions of the Amended and Restated Loan and Security Agreement between Borrower and Bank (the "**Agreement**"), (1) Borrower is in complete compliance for the period ending _____ with all required covenants except as noted below, (2) there are no Events of Default, (3) all representations and warranties in the Agreement are true and correct in all material respects on this date except as noted below; provided, however, that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof; and provided, further that those representations and warranties expressly referring to a specific date shall be true, accurate and complete in all material respects as of such date, (4) Borrower, and each of its Subsidiaries, has timely filed all required tax returns and reports, and Borrower has timely paid all foreign, federal, state and local taxes, assessments, deposits and contributions owed by Borrower except as otherwise permitted pursuant to the terms of Section 5.9 of the Agreement, and (5) no Liens have been levied or claims made against Borrower or any of its Subsidiaries, if any, relating to unpaid employee payroll or benefits of which Borrower has not previously provided written notification to Bank.

Attached are the required documents supporting the certification. The undersigned certifies that these are prepared in accordance with GAAP consistently applied from one period to the next except as explained in an accompanying letter or footnotes. The undersigned acknowledges that no borrowings may be requested at any time or date of determination that Borrower is not in compliance with any of the terms of the Agreement, and that compliance is determined not just at the date this certificate is delivered. Capitalized terms used but not otherwise defined herein shall have the meanings given them in the Agreement.

Please indicate compliance status by circling Yes/No under "Complies" column.

Reporting Covenants	**Required**	**Complies**
Monthly financial statements (consolidated and consolidating) with Compliance Certificate	Monthly within 30 days	Yes No
Annual financial statements (CPA Audited)	Earlier of FYE within 150 days or within 5 days after filing with SEC	Yes No
10-Q, 10-K and 8-K	Within 5 days after filing with SEC	Yes No
A/R & A/P Agings and Deferred Revenue reports	Monthly within 30 days	Yes No
Board-approved Projections	FYE within 60 days	Yes No
Borrowing Base Reports	Monthly within 30 days and with each Advance request	Yes No
The following Intellectual Property was registered after the Effective Date (if no registrations, state "None") _____		

Financial Covenants	**Required**	**Actual**	**Complies**
Maintain as indicated:			
Adjusted EBITDA (three-month, tested monthly)	*$_____	$_____	Yes No
Minimum Revenue (tested quarterly)	**$_____	$_____	Yes No
Minimum Liquidity (tested monthly)	$3,500,000.00	$_____	Yes No

**As set forth in Section 6.9(a)*
**As set forth in Section 6.9(b)*

Streamline Period	Required	Actual	Complies
Maintain:			
Adjusted Quick Ratio	≥ 1.50:1.0	_____:1.0	Yes No

The following financial covenant analyses and information set forth in Schedule 1 attached hereto are true and accurate as of the date of this Certificate.

Other Matters

Have there been any amendments of or other changes to the capitalization table of Borrower and to the Operating Documents of Borrower or any of its Subsidiaries? If yes, provide copies of any such amendments or changes with this Compliance Certificate.	Yes	No

The following are the exceptions with respect to the certification above: (If no exceptions exist, state "No exceptions to note.")

CANCER GENETICS, INC.

By: __
Name: __ Date: __
Title: __

GENTRIS, LLC

By: __
Name: __ Compliance Status: Yes No
Title: __

BANK USE ONLY

Received by: __

Verified: __

Date: __

SCHEDULE 1 TO COMPLIANCE CERTIFICATE

FINANCIAL COVENANTS OF BORROWER

In the event of a conflict between this Schedule and the Agreement, the terms of the Agreement shall govern.

Dated: _____

I. **Adjusted EBITDA** (Section 6.9(a)) (three-months, tested monthly) (calculated on a consolidated basis with respect to Borrower and its Subsidiaries)

Required: *$_____

**As set forth in Section 6.9(a)*

Actual: $_____

A.	Net Income	$_____
B.	To the extent included in the determination of Net Income:	
	1. Interest Expenses	$_____
	2. depreciation expense	$_____
	3. amortization expense	$_____
	4. non-cash stock compensation expense	$_____
	5. income tax expense	$_____
	6. restructuring and severance costs (not to exceed $200,000.00 in the aggregate in any fiscal year of Borrower)	$_____
	7. without duplication of 6, severance costs not exceeding One Hundred Ninety Thousand Dollars ($190,000.00) in the aggregate during the first (1st) quarter of Borrower's 2017 fiscal year	$_____
C.	The sum of lines 1 through 7	$_____
D.	Unfinanced capital expenditures	$_____
E.	Adjusted EBITDA (line A plus line C minus line D)	$_____

Is line E equal to or greater than *$_____?

No, not in compliance

Yes, in compliance

I I . **Minimum Revenue** (Section 6.9(b)) (tested quarterly for a quarterly period) (calculated on a consolidated basis with respect to Borrower and its Subsidiaries)

Required: *$_____

**As set forth in Section 6.9(b)*

Actual: $_____

Is the actual revenue equal to or greater than *$_____?

No, not in compliance

Yes, in compliance

III. **Minimum Liquidity** (Section 6.9(c)) (tested monthly) (calculated with respect to Borrower only, and not on a consolidated basis)

Required: $3,500,000.00

Actual: $_____

A.	Aggregate amount of unrestricted and unencumbered cash held at such time by Borrower in accounts maintained with Bank	$_____
B.	Availability Amount	$_____
C.	Liquidity (line A plus line B)	$_____

Is line C equal to or greater than $3,500,000.00?

No, not in compliance

Yes, in compliance

EXHIBIT C

Borrowing Base Report

[To be provided by Bank]

2108367.4\56120.03239

Partners for Growth

Loan and Security Agreement

Borrower: **Cancer Genetics, Inc., a Delaware corporation ("Parent")**
Address: **201 Route 17 N., 2nd Floor, Rutherford, NJ 07070**

Borrower: **Gentris, LLC, a Delaware limited liability company ("Gentris")**
Address: **33 Southcenter Court, Ste. 400, Morrisville, NC 27560**

Date: **March 22, 2017**

THIS LOAN AND SECURITY AGREEMENT (this "Agreement") is entered into on the above date (the "Effective Date") between PARTNERS FOR GROWTH IV, L.P. ("PFG"), whose address is 1660 Tiburon Blvd., Suite D, Tiburon, CA 94920 and Parent and Gentris (collectively, jointly and severally, "Borrower"), whose chief executive offices are located at the addresses set forth below their respective names above (with respect to each Borrower, such "Borrower's Address"). The Schedule to this Agreement (the "Schedule") being signed by the parties concurrently with the execution and delivery of this Agreement is an integral part of this Agreement. Definitions of certain terms used in this Agreement are set forth in Section 7 below.

1. THE LOAN.

1.1 The Loan. Subject to the terms and conditions of this Agreement, on the Effective Date, PFG will make a loan to Borrower in the original principal amount set forth in Section 1 of the Schedule (the "Loan").

1.2 Interest. The Loan and all other monetary Obligations shall bear interest at the rate(s) shown in the Schedule, except where otherwise expressly set forth in this Agreement. Interest shall be due and payable monthly on the first day of each calendar month for interest accrued during the prior calendar month (or such other Billing Period and on the Maturity Date (or immediately upon acceleration of the Loan, if earlier). Interest payable from time to time on Loan principal will be determined by multiplying outstanding Loan principal by the per annum interest rate set forth in Section 2 of the Schedule and dividing such product by 360 to render a daily interest amount, which daily interest amount will be multiplied by the principal amount outstanding on actual number of days elapsed in each month (or other Billing Period) to derive the amount of interest due in such month (or other Billing Period In computing interest, (i) all payments received after 12:00 p.m. U.S. Pacific time on any day shall be deemed received at the opening of business on the next Business Day, and (ii) the date of the making of the Loan shall be included and the date of payment shall be excluded; provided, however, that if the Loan is repaid on the same day on which it is made, such day shall be included in computing interest on the Loan.

1.3 Fees. Borrower shall pay PFG the Loan Fee shown on the Schedule, in addition to all Lender Expenses and all other fees and expenses payable to PFG under this Agreement or any other Loan Documents, all of which are not refundable.

1.4 Loan Requests. To make any request of PFG in relation to the Loan, Borrower shall make a Qualifying Request to PFG compliant with Section 8.5. Loan Requests are not deemed made until PFG acknowledges receipt of the same by electronic mail or otherwise in writing. Without limiting the effect of Section 8.22, each Borrower appoints the Responsible Officer(s) as its authorized agent to make Loan Requests and any Loan Request made by such Responsible Officer(s) shall be binding on each Borrower as if made by its own respective officers who are duly authorized to bind Borrower in respect of this Agreement. PFG's obligation to fund a Loan Request shall be subject to its receipt of such reports, certificates and other information as may be set forth in the Schedule. Loan Requests received after 12:00 Noon U.S. Pacific time on any Business Day will not be deemed to have been received by PFG until the next Business Day. PFG may rely on any Loan Request given by a person whom PFG believes in good faith is a Responsible Officer, and Borrower will indemnify PFG for any loss PFG suffers as a result of that reliance.

1.5 Late Fee. If any payment of interest or any other monetary Obligation is not received by PFG by the end of the third Business Day after the later of (i) the date for such payment to be received by PFG as reflected in any PFG invoice that may be sent from time to time to Borrower and (ii) such Obligation's Due Date, then upon each such failure to timely pay Borrower shall pay PFG a late payment fee equal to 5% of the amount of the payment due and not timely paid. Notwithstanding anything to the contrary set forth in this Agreement, the imposition of any late payment fee and Borrower's payment thereof shall not be construed as PFG's waiver of Borrower's obligation to pay such amount or any other amount when due, and PFG's acceptance

of any late payment or late payment fee shall not restrict PFG's exercise of any remedies arising out of any such failure. Unless expressly waived in writing by PFG in its sole discretion, interest at the Default Rate shall apply to all monetary Obligations not timely paid from and including the date when Borrower's obligation to pay the aforementioned late payment fee arises until the date of payment.

1.6 Invoicing. PFG will deliver invoices to Borrower (i) not later than the 25th day of each calendar month with respect to interest on the outstanding principal balance of the Loan due on the first day of the next succeeding calendar month, and (ii) not less than five (5) Business Days before the Due Date therefor with respect to other monetary Obligations; provided, however, the failure of PFG to send or Borrower to receive an invoice for payment of any monetary Obligations shall in no event excuse Borrower from its obligation to make such payment on the Due Date therefor.

2. SECURITY INTEREST.

2.1 Grant of Security Interest. To secure the payment and performance of all of the Obligations when due, Borrower hereby grants to PFG a continuing security interest in and Lien upon, and pledges to PFG, all of the following (collectively, the "Collateral"): all right, title and interest of Borrower in and to all of the following, whether now owned or hereafter arising or acquired, and wherever located (collectively, the "Collateral"): all Accounts; all Inventory; all Equipment; all Collateral Accounts (including Deposit Accounts); all General Intangibles (including without limitation all Intellectual Property); all Investment Property; all Other Property; and any and all claims, rights and interests in any of the above, together with all guaranties and security for, all substitutions and replacements for, all additions, accessions, attachments, accessories, and improvements to, and all proceeds (including proceeds of any insurance policies, proceeds of proceeds and claims against third parties) of, any and all of the above, together with Borrower's books relating to any and all of the above. To the extent the Collateral includes Borrower's ownership interests in non-U.S. Subsidiaries, the grant of a security interest in such ownership interests shall be limited to 65% of the voting equity interests in such Persons. Notwithstanding the foregoing, Collateral shall not include (i) motor vehicles and similar assets the perfection of a security interest in which would be governed by state "Certificate of Title" laws by notating the security interest on the certificate of title, (ii) real property or interests therein, and (iii) lease security deposits and the CD Accounts.

3. REPRESENTATIONS, WARRANTIES AND COVENANTS OF BORROWER.

In order to induce PFG to enter into this Agreement, to make the Loan and to continue to grant credit accommodations to Borrower, Borrower represents and warrants to PFG, except to the extent otherwise specified in Exhibit A, as follows, and Borrower covenants that the following representations will continue to be true in all material respects (except for representations expressly made as of a particular date, in which case such representations will continue to be true as of said date), and that Borrower will at all times comply in all material respects with all of the following covenants, in each case throughout the term of this Agreement and thereafter until all Obligations have been paid and performed in full:

3.1 Corporate Existence, Authority and Consents. Borrower is, and will continue to be, duly organized, validly existing and in good standing under the laws of the jurisdiction of its formation. All Governmental Authorizations required for Borrower to lawfully conduct its business as conducted on the Effective Date are in full force and effect except where the failure to maintain any such Governmental Authorizations in full force and effect would not result in a Material Adverse Change. The execution, delivery and performance by Borrower of this Agreement and all other Loan Documents (i) have been duly and validly authorized, (ii) are enforceable against Borrower in accordance with their respective terms (except as enforcement may be limited by equitable principles and by bankruptcy, insolvency, reorganization, moratorium or similar Legal Requirements relating to creditors' rights generally), (iii) do not violate Borrower's Constitutional Documents, any Legal Requirement, or any material agreement or instrument binding upon Borrower or any of its material Collateral, and (iv) do not require any action by, filing, registration or qualification with, or Governmental Authorization from, any Governmental Body (except such Governmental Authorizations which have already been obtained and are in full force and effect), and (v) do not constitute grounds for acceleration of any material Indebtedness or obligation under any agreement or instrument of Borrower or relating to its property. Without limiting the foregoing: (A) the Board has the authority under Borrower's Constitutional Documents to enter into and cause Borrower to perform, or to delegate such authority to a Responsible Officer to enter into and cause Borrower to perform, its Obligations, and (B) other than the approval of the requisite members of the Board, no consent is required of any Person to make the representation set forth in clause (A) absolutely true in all respects.

3.2 Name; Trade Names and Styles. As of the Effective Date, the names of Parent and Gentris set forth in the heading to this Agreement are their correct names as set forth in their respective Constitutional Documents. Listed in the Representations are all prior names of Borrower and all of Borrower's present and prior trade names as of the Effective Date. Borrower shall

give PFG 30 days' prior written notice before changing its name or doing business under any other name. Borrower has complied, and will in the future comply, in all material respects, with all laws relating to the conduct of business under a fictitious business name, if applicable to Borrower.

3.3 Place of Business; Location of Collateral. As of the Effective Date, the addresses set forth in the heading to this Agreement are the correct addresses of Parent's and Gentris's respective chief executive offices. In addition, as of the Effective Date, Borrower has places of business, and Collateral is located, only at the locations set forth in the Representations. Borrower will give PFG at least 30 days prior written notice before opening any additional place of business, changing its chief executive office, or moving any of the Collateral valued at greater than $25,000 to a location other than Borrower's Address or one of the locations set forth in the Representations, except that Borrower may maintain sales offices in the ordinary course of business at which not more than a total of $10,000 fair market value of Equipment is located.

3.4 Title to Collateral; Perfection; Permitted Liens.

(a) Borrower is as of the Effective Date, and will at all times in the future be, the sole owner of all the Collateral, except for Collateral which is leased or licensed to Borrower. The Collateral is and will remain free and clear of any and all Liens except for Permitted Liens. Upon the consummation of the transactions contemplated hereby, PFG will have, and will continue to have, a First-Priority perfected and enforceable Lien upon all of the Collateral, subject only to Permitted Liens. Borrower will at all times defend PFG and its interests in the Collateral against all claims of others.

(b) Borrower has set forth in the Representations all of Borrower's Collateral Accounts as of the Effective Date. Borrower shall (i) give PFG five (5) Business Days advance written notice before establishing any new Collateral Accounts or (ii) depositing any Cash or Cash Equivalents or Investment Property into any new Collateral Account and (iii) shall cause the institution where any such new Collateral Account is maintained to execute and deliver to PFG (or to the Senior Lender and PFG) a Control Agreement in form sufficient to perfect PFG's security interest in the Collateral Account and otherwise satisfactory to PFG in its good faith business judgment.

(c) In the event that Borrower shall at any time after the Effective Date acquire any commercial tort claims, which it is asserting, and in which the potential recovery exceeds $100,000, Borrower shall promptly notify PFG thereof in writing and provide PFG with such information regarding the same as PFG shall request (unless providing such information would waive Borrower's attorney-client privilege). Such notification to PFG shall constitute a grant of a security interest in the commercial tort claim and all proceeds thereof to PFG, subject only to Permitted Liens, and Borrower shall execute and deliver to PFG all instruments and agreements and take all such actions as PFG shall reasonably request in connection therewith.

(d) No Collateral with a value in excess of $250,000 is affixed to any real property in such a manner or with such intent as to become a fixture, except as disclosed in Exhibit A. From and after the Effective Date, without PFG's consent in each instance, no material part of the Collateral will be affixed to any real property in such a manner, or with such intent, as to become a fixture, which consent may be conditioned on a grant to PFG of a Lien upon such fixture, in form and substance reasonably satisfactory to PFG, subject to the rights of the Senior Lender. Borrower is not, except as set forth in Exhibit A, and will not become a lessee under any real property lease that prohibits, restrains, impairs or will prohibit, restrain or impair Borrower's right to remove any Collateral from the leased premises. Whenever any Collateral is located upon premises in which any third party has an interest, Borrower shall, whenever requested by PFG, use commercially reasonable efforts to cause such third party to execute and deliver to PFG, in form reasonably acceptable to PFG, such waivers and subordinations as PFG shall specify in its good faith business judgment. Borrower will comply with all material terms of any lease of real property where any of the Collateral now or in the future may be located, except where the failure to do so would not reasonably be expected to result in the termination of such lease or the impairment of Lender's Lien with respect to Collateral with a book value of $100,000 or more.

(e) Except as specified in the Representations, Borrower is not party to, nor is it bound by, any Restricted License.

3.5 Maintenance of Collateral. Borrower will maintain all material Collateral consisting of Equipment in good working condition (ordinary wear and tear excepted), and Borrower will not use the Collateral for any unlawful purpose. Borrower will promptly advise PFG in writing of any material loss or damage to the Collateral.

3.6 Books and Records. Borrower will maintain at Borrower's Address books and records in accordance with GAAP that are true, correct and complete in all material respects.

3.7 Financial Condition, Statements and Reports. All Financial Statements now or in the future delivered to PFG have been, and will be, prepared in conformity with GAAP and now and in the future will fairly present the results of operations and

financial condition of Borrower in all material respects, in accordance with GAAP, as of the dates and for the periods therein stated. Between the last date covered by any such statement provided to PFG and the Effective Date, there has been no Material Adverse Change.

3.8 Tax Returns and Payments; Pension Contributions. Borrower has timely filed, and will timely file, all required Tax Returns, and Borrower has timely paid, and will timely pay, all Taxes now or in the future owed by Borrower, except to the extent such Taxes do not in the aggregate exceed $25,000. Borrower may, however, defer payment of any of the foregoing which are contested by Borrower in good faith, provided that Borrower (i) contests the same by appropriate proceedings promptly and diligently instituted and conducted, (ii) notifies PFG in writing of the commencement of, and any material development in, the proceedings, and (iii) posts bonds or takes any other steps required to keep the same from becoming a Lien upon any of the Collateral. Borrower is unaware of any claims or adjustments proposed for any of Borrower's prior tax years which could result in additional Taxes becoming due and payable by Borrower. Borrower has paid, and shall continue to pay, all amounts necessary to fund all present and future pension, profit sharing and deferred compensation plans in accordance with their terms, and Borrower has not and will not withdraw from participation in, permit partial or complete termination of, or permit the occurrence of any other event with respect to, any such plan which could reasonably be expected to result in any liability of Borrower, including any liability to the Pension Benefit Guaranty Corporation or its successors or any other Governmental Body.

3.9 Compliance with Law. Borrower has, to its Knowledge, complied and will comply, in all material respects, with all provisions of all Legal Requirements applicable to Borrower, including, but not limited to, those relating to Borrower's ownership of real or personal property, the conduct and licensing of Borrower's business, and all environmental matters except where the failure to do so would not reasonably be expected to have a material adverse effect on its business. None of Borrower's or any Subsidiaries' properties or assets has been used by Borrower or any Subsidiary or, to Borrower's Knowledge, by previous Persons, in disposing, producing, storing, treating or transporting any hazardous substance other than lawfully. Borrower and each of its Subsidiaries have obtained all consents, approvals and authorizations of, made all declarations or filings with, and given all notices to all Governmental Bodies that are necessary to conduct their respective business in a lawful manner and otherwise as currently conducted.

3.10 Litigation. Except as set forth in Exhibit A, there is no claim, suit, litigation, proceeding or investigation pending or (to Borrower's Knowledge) threatened in writing against or affecting Borrower in any court or before any Governmental Body (or to Borrower's Knowledge is there any basis therefor) (i) involving individually or in the aggregate more than $250,000, or (ii) which could reasonably be expected to result, either separately or in the aggregate, in any Material Adverse Change. Borrower will promptly inform PFG in writing of any claim, proceeding, litigation or investigation in the future threatened or instituted against Borrower involving more than, individually or in the aggregate, $100,000 or more.

3.11 Use of Proceeds. Proceeds of the Loan shall be used solely for lawful business purposes, including general working capital purposes, and otherwise as detailed in the Schedule. Borrower is not purchasing or carrying any "margin stock" (as defined in Regulation U of the Board of Governors of the Federal Reserve System) and no part of the proceeds of any Loan will be used to purchase or carry any "margin stock" or to extend credit to others for the purpose of purchasing or carrying any "margin stock."

3.12 No Default. At the Effective Date, no Default or Event of Default has occurred, and no Default or Event of Default will have occurred after giving effect to the Loan being made concurrently herewith.

3.13 Protection and Registration of Intellectual Property Rights. Borrower owns or otherwise holds the right to use all Intellectual Property rights material to Borrower's business or necessary for the conduct of its business as currently conducted and reflected in any Borrower's financial plans covering future periods. Borrower shall: (a) protect, defend and maintain the validity and enforceability of its Intellectual Property, other than Intellectual Property that is not material to Borrower's business, has a fair value of less than $25,000 and that Borrower has affirmatively determined not to maintain or to abandon; (b) promptly advise PFG in writing upon becoming aware of infringements of its Intellectual Property material to its business; (c) not allow any Intellectual Property material to Borrower's business to be abandoned, forfeited or dedicated to the public without PFG's written consent, (d) provide (i) written notice to PFG at least ten (10) days prior to entering into or becoming bound by any Restricted License (other than over-the-counter software that is commercially available to the public and licenses or agreements of Borrower with customers in which Borrower is an original equipment manufacturer), and (ii) use commercially reasonable efforts to obtain the consent or waiver of any Person whose consent or waiver is necessary for (A) any Restricted License to be deemed "Collateral" and for PFG to have a Lien in it that might otherwise be restricted or prohibited by law or by the terms of any such Restricted License, whether now existing or entered into in the future, and (B) PFG to have the ability in the event of a liquidation of any Collateral to dispose of such Collateral in accordance with PFG's rights and remedies under this Agreement

and the other Loan Documents, and (e) while any Obligations are outstanding, shall not Transfer any Intellectual Property with a value in excess of $25,000 without PFG's consent, which consent shall not be unreasonably withheld if no Default or Event of Default has occurred and is then continuing, the Transfer of such Intellectual Property would not give rise to such a Default or Event of Default, and if such Intellectual Property meets the three criteria set forth as the exceptions to Borrower's duties to protect, defend and maintain under clause (a), above. If, before the Obligations have been paid and/or performed in full, Borrower shall: (i) adopt, use, acquire or apply for registration of any trademark, service mark or trade name; (ii) apply for registration of any patent or obtain any patent or patent application; (iii) create or acquire any published or material unpublished works of authorship that is or is to be registered with the U.S. Copyright Office or any non-U.S. equivalent; or (iv) register or acquire any domain name or domain name rights, then Borrower shall promptly advise PFG of same and take such actions as PFG may reasonably request to perfect PFG's interest in said Collateral.

3.14 Domain Rights and Related Matters. Borrower (a) is the sole record, legal and beneficial owner of all domain names and domain name rights used in connection with its business, free and clear of any rights or claims of any third party except Permitted Liens, and (b) the information set forth in the Representations with respect to domain names and ownership thereof the domain registry, domain servers, location and administrative contact information, web hosting and related services and facilities (collectively, "Domain Rights") is true, accurate and complete in all material respects. Borrower (a) shall promptly notify PFG of any material changes to such information, (b) shall maintain all Domain Rights that Borrower has not affirmatively determined to abandon in full force and effect so long as any Obligations remain outstanding, (c) shall, upon request of PFG, notify such third parties (including domain registrars, hosting companies and internet service providers) of PFG's Lien upon Borrower's Domain Rights, and (d) shall promptly advise PFG in writing of any material disputes or infringements of Borrower's Domain Rights. The obligations of Borrower under this Section shall not be limited by any Borrower obligations under the IP Security Agreement and related Collateral Agreements and Notices executed in connection with this Agreement.

4. ADDITIONAL DUTIES OF BORROWER.

Borrower will at all times comply with all of the following covenants throughout the term of this Agreement:

4.1 Financial and Other Covenants. Borrower shall at all times comply with the financial and other covenants set forth in the Schedule.

4.2. Remittance of Proceeds. Subject to the rights of the Senior Lender and the holders of Permitted Liens contemplated within clause (i) of the definition thereof with priority over PFG's Liens, all proceeds arising from the disposition of any Collateral shall be delivered, in kind, by Borrower to PFG in the form in which received by Borrower not later than the following Business Day after receipt by Borrower, to be applied to the Obligations in such order as PFG shall determine; provided that, if no Default or Event of Default has occurred and is continuing, Borrower shall not be obligated to remit to PFG (i) the proceeds of Accounts arising in the ordinary course of business, or (ii) the proceeds of the sale of surplus, worn out or obsolete Equipment disposed of by Borrower in good faith in an arm's length transaction on fair and reasonable terms. Borrower agrees that it will not commingle proceeds of Collateral (other than those described in subclauses (i) and (ii) above) with any of Borrower's other funds or property, but will hold such proceeds separate and apart from such other funds and property and in trust for PFG, except as set forth above, and subject to the rights of the Senior Lender and the holders of Permitted Liens contemplated within clause (i) of the definition thereof with priority over PFG's Liens. Subject to the rights of the Senior Lender, PFG may, in its good faith business judgment, require that all proceeds of Collateral be deposited by Borrower into a lockbox account or such other "blocked account" as PFG may specify, pursuant to a blocked account agreement in such form as PFG may specify in its good faith business judgment. Nothing in this Section limits the restrictions on disposition of Collateral set forth elsewhere in this Agreement.

4.3 Insurance. Borrower shall at all times insure all of the tangible personal property Collateral and carry such other business insurance, with insurers reasonably acceptable to PFG, in such form and amounts as are satisfactory to PFG and are customary and in accordance with standard practices for Borrower's industry and locations; and Borrower shall provide evidence of such insurance to PFG. All property and casualty insurance policies shall have a lender's loss payable endorsement showing PFG as a lender loss payee, and each liability insurance policy shall name PFG as an additional insured, in each as PFG's interests may appear. Upon receipt of the proceeds of any property and casualty insurance, subject to the rights of the Senior Lender, PFG shall apply such proceeds in reduction of the Obligations as PFG shall determine in its good faith business judgment, except that, provided no Default or Event of Default has occurred and is continuing, PFG shall release to Borrower insurance proceeds with respect to Collateral totaling less than $100,000, which shall be utilized by Borrower for the replacement of the Collateral with respect to which the insurance proceeds were paid. PFG may require reasonable assurance that the insurance proceeds so released will be so used. If Borrower fails to provide or pay for any insurance, PFG may, but is not obligated to, obtain the same at Borrower's expense. Borrower shall promptly deliver to PFG copies of all material reports made to insurance companies.

4.4 Reports. Borrower, at its expense, shall provide PFG with the written reports set forth in the Schedule, and such other written reports with respect to Borrower (including budgets, projections, operating plans and other financial documentation), as PFG shall from time to time specify in its good faith business judgment.

4.5 Access to Collateral, Books and Records; Additional Reporting and Notices. At reasonable times, on three (3) Business Days' notice, PFG, or its agents, shall have the right to inspect the Collateral, and the right to audit and copy Borrower's books and records. The foregoing inspections and audits shall be at Borrower's expense and the charge therefor shall be $850 per person per day (or such higher amount as shall represent PFG's then current standard charge for the same), plus Lender Expenses, provided that so long as no Default or Event of Default has occurred and is then continuing and no prior inspection or audit has revealed material deficiencies or inaccuracies in Borrower's books and records, only one such inspection and audit shall be at Borrower's expense during any calendar year. Notwithstanding the foregoing, Borrower shall not be required to disclose to PFG any document or information (i) where disclosure is prohibited by applicable law, or (ii) is subject to attorney-client or similar privilege or constitutes attorney work product. If Borrower is withholding any information under the preceding sentence, it shall so advise PFG in writing, giving PFG a general description of the nature of the information withheld.

4.6 Negative Covenants. Borrower shall not do any of the following without PFG's prior written consent:

(i) acquire any material assets, except in the ordinary course of business, or make any Investments other than Permitted Investments;

(ii) except as disclosed in SEC Filings made prior to the date hereof, directly or indirectly enter into or permit to exist any material transaction with any Affiliate of Borrower, except for transactions that are in the ordinary course of Borrower's business and upon fair and reasonable terms that are no less favorable to Borrower than would be obtained in an arm's length transaction with a non-affiliated Person, provided that upon not less than thirty (30) days' prior notice to PFG, one Borrower may merge with another Borrower and a Non-Borrower Subsidiary may merge with a Borrower or another Non-Borrower Subsidiary; provided, further, that the merger of Gentris and Parent shall require notice only upon completion;

(iii) Transfer any part of its business or property, except for (A) the sale of finished Inventory in the ordinary course of Borrower's business, (B) the sale of obsolete or unneeded Equipment in the ordinary course of business and otherwise in compliance with the terms of this Agreement, (C) the making of Permitted Investments, and (D) the granting of Permitted Liens; and, for the avoidance of any doubt, a Transfer of business or property, as contemplated above, would include (1) Borrower or any Subsidiary making or causing any payment to be made on Subordinated Debt unless expressly permitted under the terms of the subordination, intercreditor or other agreement to which the Subordinated Debt is subject (and, if permitted in this Agreement, only to the extent permitted), and (2) other than with the express consent of PFG in its sole business discretion, the amendment or modification of any such subordination, intercreditor or other agreement to provide for earlier or greater principal, interest or other payments thereon or adversely affect the subordination thereof to the Obligations;

(iv) store any Inventory or other Collateral with any warehouseman or other third party with an aggregate value (per location) of $25,000 or greater, unless there is in place a bailee agreement in such form as PFG shall specify in its good faith business judgment between PFG and such warehouseman or other third party;

(v) sell any Inventory outside the ordinary course of business;

(vi) make any loans of any money or other assets, other than Permitted Investments;

(vii) incur or permit to exist any Indebtedness, other than Permitted Indebtedness;

(viii) guarantee or otherwise become liable with respect to the obligations of another party or entity;

(ix) pay or declare any Dividends (except for dividends payable solely in stock of Borrower), provided that Gentris may declare and pay Dividends to Parent;

(x) redeem, retire, purchase or otherwise acquire, directly or indirectly, any of Borrower's equity, except as required in the ordinary course of business and consistent with past practice in connection with redeeming or purchasing equity of departing employees, up to a maximum aggregate of $25,000 in any fiscal year;

(xi) engage, directly or indirectly, in any business other than the businesses currently engaged in by Borrower or reasonably related thereto;

(xii) make Investments in Non-Borrower Subsidiaries of more than $750,000 in the aggregate among all Non-Borrower Subsidiaries in any rolling four (4) quarter period, or incur Indebtedness to Non-Borrower Subsidiaries of, when combined with

the amount of the foregoing Investments, more than $750,000 in the aggregate among all Non-Borrower Subsidiaries in any rolling four (4) quarter period;

(xiii) make or permit any payment on any Subordinated Debt, except under the terms of the subordination, intercreditor, or other similar agreement to which such Subordinated Debt is subject, or (b) amend any provision in any document relating to the Subordinated Debt which would increase the amount thereof, provide for earlier or greater principal, interest, or other payments thereon, or adversely affect the subordination thereof to the Obligations;

(xiv) (A) without at least thirty (30) days prior written notice to PFG: (1) add any new offices or business locations, including warehouses (unless such new offices or business locations contain less than $10,000 in Borrower's assets or property), (2) change its jurisdiction of organization, (3) change its organizational type, (4) change its legal name, (5) change any organizational number (if any) assigned by its jurisdiction of organization; or (6) form any new Subsidiaries, and in each case, subject to (x) Borrower's and such Subsidiary(ies) compliance with Section 4.9 hereof, (y) such Subsidiary(ies) compliance with Section 3.4(b), and (z) such Subsidiary(ies) compliance with Section 8(b) of the Schedule(xiv) (A) without at least thirty (30) days prior written notice to PFG, form any new Subsidiaries; or (B) fail to provide notice to PFG of any Key Person departing from or ceasing to be actively in the employ of Borrower within five (5) Business Days after such Key Person's departure from Borrower;

(xv) create, incur, allow or suffer any Lien on any of its property, or assign or convey any right to receive income, including the sale of any Accounts, or permit any of its Subsidiaries to do so, except for Permitted Liens, permit any Collateral not to be subject to the First-Priority Lien granted herein, or enter into any agreement, document, instrument or other arrangement (except with or in favor of PFG and the Senior Lender) with any Person which directly or indirectly prohibits or has the effect of prohibiting Borrower or any Subsidiary from assigning, mortgaging, pledging, granting a security interest in or upon, or encumbering any of Borrower's or any Subsidiary's Intellectual Property, except as otherwise permitted in Section 3.13 hereof and the definition of Permitted Liens;

(xvi) maintain any Collateral Accounts other than in accordance with Section 4.10 and Section 8(b) of the Schedule;

(xvii) liquidate or dissolve, or elect or resolve to liquidate or dissolve; or

(xviii) resolve by Board resolution to effect any of the foregoing actions in clauses (i) through (xvii), inclusive.

Transactions permitted by the foregoing provisions of this Section are only permitted if no Default or Event of Default would occur as a result of such transaction.

4.7 Litigation Cooperation. Should any third-party suit or proceeding be instituted by or instituted or threatened in writing against PFG with respect to any Collateral or relating to Borrower, Borrower shall, without expense to PFG, make available Borrower and its officers, employees and agents and Borrower's books and records, to the extent that PFG may deem them reasonably necessary in order to prosecute or defend any such suit or proceeding.

4.8 Changes. Borrower agrees to promptly notify PFG in writing of any changes in the information set forth in the Representations, to the extent required in Section 6 of the Schedule.

4.9 Further Assurances. Borrower agrees, at its expense, on reasonable request by PFG, to execute and deliver to PFG all instruments and agreements, and take all actions, as PFG, may, in its good faith business judgment, deem necessary or useful in order to perfect and maintain PFG's perfected First-Priority security interest in the Collateral (subject to Permitted Liens), and in order to fully consummate the transactions contemplated by this Agreement, including without limitation, the execution of a cross-corporate continuing guaranty among Borrower and Non-Borrower Subsidiaries. In addition, Borrower shall deliver to PFG, within five (5) Business Days after the same are sent or received, copies of all correspondence, reports, documents and other filings with any Governmental Body regarding compliance with or maintenance of Governmental Authorizations or Legal Requirements or that could reasonably be expected to have a material effect on any of the Governmental Authorizations or otherwise on the operations of Borrower or any of its Subsidiaries.

4.10 Collateral Accounts. Subject to Section 8(b) of the Schedule, (a) unless PFG otherwise consents in its sole discretion, Borrower shall at all times maintain and cause each of its Subsidiaries (other than Non-U.S. Subsidiaries) to maintain their primary operating accounts and excess cash with the Senior Lender and its Affiliates, and (b) Borrower shall at all times thereafter, maintain all of its Collateral Accounts with institutions in respect of which a Control Agreement in favor of PFG is at all times in effect.

4.11 Authorization to File Security Instruments. By executing and delivering a term sheet in respect of the Loan, Borrower shall be deemed to have authorized PFG to file Security Instruments on or prior to the Effective Date, without notice to Borrower, with all appropriate jurisdictions to perfect or protect PFG's First-Priority security interest, including a notice that any disposition of the Collateral shall be deemed to violate the rights of PFG under the Code. Such Security Instruments may describe the Collateral as "all assets of the Debtor" or words of similar effect, or as being of an equal or lesser scope, or with greater detail, all in PFG's discretion.

4.12 Burdensome Agreements. Borrower shall not, directly or indirectly, create or otherwise cause or suffer to exist or become effective any encumbrance or restriction on the ability of any of its Subsidiaries to (a) pay dividends or make any other distributions on its equity or any other interest or participation in its profits owned by Parent or any of its Subsidiaries, or pay any Indebtedness owed to Borrower or any of its Subsidiaries, (b) make loans or advances to Parent or any of its Subsidiaries or (c) transfer any of its properties to Parent or any of its Subsidiaries, except for such encumbrances or restrictions existing under or by reason of (i) applicable Legal Requirements; (ii) this Agreement and the other Loan Documents; (iii) customary provisions restricting subletting or assignment of any lease governing a leasehold interest of any of its Subsidiaries; (iv) customary provisions restricting assignment of any agreement entered into by a Subsidiary in the ordinary course of business; or (v) any holder of a Permitted Lien restricting the Transfer of the property subject thereto.

4.12 Full Disclosure. No written representation, warranty or other statement of Borrower in any certificate or written statement given to PFG, as of the date such representation, warranty, or other statement was made, taken together with all such written certificates and written statements given to PFG, contains any untrue statement of a material fact or omits to state a material fact necessary to make the statements contained in the certificates or statements not misleading (it being recognized by PFG that the projections and forecasts provided by Borrower in good faith and based upon reasonable assumptions are not viewed as facts and that actual results during the period or periods covered by such projections and forecasts may differ from the projected or forecasted results).

5. TERM.

5.1 Maturity Date. This Agreement shall continue in effect until the Maturity Date, subject to Sections 5.2, 5.3 and 5.4, below.

5.2 Early Termination. This Agreement may be terminated prior to the Maturity Date as follows: (i) by Borrower, effective three Business Days after written notice of termination is given to PFG and payment in full in cash of all Obligations; or (ii) by PFG at any time after the occurrence and during the continuance of an Event of Default, without notice, effective immediately. If a right to prepay Obligations is provided in the Schedule and the exercise of such right is subject to payment of any consideration to PFG as a condition to such exercise, a Borrower Default or Event of Default that results in an acceleration of Obligations and/or termination of this Agreement shall not relieve Borrower of the obligation to pay such consideration, which shall be included in the Obligations required to be paid or performed by Borrower.

5.3 Payment of Obligations. On the Maturity Date or on any earlier effective date of termination, Borrower shall pay and perform in full all Obligations, whether evidenced by installment notes or otherwise, and whether or not all or any part of such Obligations are otherwise then due and payable. Notwithstanding any termination of this Agreement, (i) all of PFG's security interests in all of the Collateral and all of the terms and provisions of this Agreement shall continue in full force and effect until all Obligations have been paid and performed in full, and (ii) no further extensions of credit will be made to Borrower unless PFG otherwise agrees in its sole and absolute discretion. No termination shall in any way affect or impair any right or remedy of PFG, nor shall any such termination relieve Borrower of any Obligation to PFG, until all of the Obligations have been paid and performed in full. Upon payment and performance in full of all the Obligations and termination of this Agreement, PFG shall, at Borrower cost and expense, promptly terminate all Security Instruments and deliver to Borrower such other documents as may be required to fully terminate PFG's security interests in Collateral.

5.4 Survival of Certain Obligations. Without limiting the survival of obligations addressed otherwise in this Agreement and notwithstanding any other provision of this Agreement, all covenants, representations and warranties made in this Agreement continue in full force until this Agreement has terminated pursuant to its terms and all Obligations (other than obligations which, by their terms, are to survive the termination of this Agreement) have been paid in full and satisfied. The obligation of Borrower in Section 8.9 to indemnify PFG shall survive until the statute of limitations with respect to such claim or cause of action shall have run.

6. EVENTS OF DEFAULT AND REMEDIES.

6.1 Events of Default. The occurrence of any of the following events shall constitute an "Event of Default" under this Agreement regardless of whether notice thereof is given by PFG and, to the extent Borrower has Knowledge thereof, Borrower shall provide prompt notice of any of the following to PFG:

(a) Any warranty, representation, covenant, statement, report or certificate at any time made or delivered to PFG by or on behalf of Borrower shall be untrue or misleading in a material respect when made or deemed to be made; or

(b) Borrower shall fail to pay any Loan or any interest thereon or any other monetary Obligation when due (after giving effect to any grace or cure period; or

(c) Borrower (i) shall fail to comply with any of the financial covenants set forth in the Schedule, or (ii) shall breach any of the provisions of Section 4.6 hereof, or (iii) shall fail to perform any other non-monetary Obligation which by its nature cannot be cured, or (iv) shall fail to permit PFG to conduct an inspection or audit as provided in Section 4.5 hereof or shall fail to provide the notices, information, briefing and other rights set forth in Section 4.5, or (v) shall fail to provide PFG with a Report under Section 6 of the Schedule within five (5) Business Days after the date due; or

(d) Borrower shall fail to perform any other non-monetary Obligation, which failure is not cured within ten days after the date performance is due; provided that, if such failure cannot reasonably be cured within such ten (10) day period, Borrower shall have an additional period of twenty (20) days to effectuate such cure, provided that Borrower promptly commences and proceeds to cure such failure within such twenty (20) day period; provided, however, if such failure results from a Default or an Event of Default for which there is a shorter cure period set forth in this Section 6.1, then the applicable cure period shall be such shorter period; or

(e) any levy, assessment, attachment or seizure is made on all or any part of the Collateral, or any Lien (other than a Permitted Lien) is made on all or any part of the Collateral which is not released or bonded within ten (10) Business Days after the occurrence of the same; or

(f) any default or event of default occurs under any obligation secured by a Permitted Lien, which default is not cured or waived within any applicable cure period by the holder thereof (and for purposes of the foregoing, a waiver does not include a forbearance); or

(g) there is, under any agreement to which Borrower is a party with a third party or parties, (i) any default resulting in the acceleration of the maturity of any Indebtedness in an amount individually or in the aggregate in excess of $100,000; or (ii) any breach or default by Borrower, the result of which could have a material adverse effect on Borrower, any Guarantor or its business or prospects; or (iii) with respect to the Senior Lender, the occurrence of an Event of Default (as defined in the Senior Debt Documents), without regard to any express or implied waiver thereof or any forbearance in respect thereof by the Senior Lender.

(h) (i) Dissolution, termination of existence, insolvency or business failure of Borrower or any Guarantor; or (ii) appointment of a receiver, trustee or custodian, for all or any part of the property of, assignment for the benefit of creditors by, or the commencement of any Insolvency Proceeding by, against or in respect of Borrower or any Guarantor under any reorganization, bankruptcy, insolvency, arrangement, readjustment of debt, dissolution or liquidation law or statute of any jurisdiction, now or in the future in effect, in each above case that is not dismissed or stayed within forty five (45) days; or (iii) Borrower shall generally not pay its debts as they become due; or (iv) Borrower shall conceal, remove or Transfer any part of its property, with intent to hinder, delay or defraud its creditors, or make or suffer any Transfer of any of its property which may be fraudulent under any bankruptcy, fraudulent conveyance or similar law; or

(i) Revocation or termination of, or limitation or denial of liability upon, any guaranty of the Obligations or any attempt to do any of the foregoing, or commencement of proceedings by any guarantor of any of the Obligations under any bankruptcy or insolvency law; or

(j) revocation or termination of, or limitation or denial of liability upon, any pledge of any certificate of deposit, securities or other property or asset of any kind pledged by any third party to secure any or all of the Obligations, or any attempt to do any of the foregoing, or commencement of proceedings by or against any such third party under any bankruptcy or insolvency law; or

(k) Borrower makes any payment on account of any indebtedness or obligation which has been subordinated to the Obligations (other than as permitted in the applicable subordination agreement), or if any Person who has subordinated such indebtedness or obligations terminates or in any way limits his or its subordination agreement; or); or

(l) Borrower shall (i) enter into any written agreement that would result in a Change in Control, or (ii) effect or suffer a Change in Control; or

(m) a default or breach shall occur under any other Loan Document, which default or breach shall be continuing after the later of cure period expressly specified in such Loan Document or ten (10) days; or

(n) a Material Adverse Change shall occur.

6.2 Remedies. Upon the occurrence and during the continuance of any Event of Default, and at any time thereafter, PFG, at its option, and without notice or demand of any kind (all of which are hereby expressly waived by Borrower), may, subject to the rights of the Senior Lender, do any one or more of the following: (a) cease extending credit and credit accommodations to Borrower under this Agreement or any other Loan Document; (b)accelerate and declare all or any part of the Obligations to be immediately due, payable, and performable, notwithstanding any deferred or installment payments allowed by any instrument evidencing or relating to any Obligation; (b) take possession of any or all of the Collateral wherever it may be found, and for that purpose Borrower hereby authorizes PFG without judicial process to enter onto any of Borrower's premises without interference to search for, take possession of, keep, store, or remove any of the Collateral, and remain on the premises or cause a custodian to remain on the premises in exclusive control thereof, without charge for so long as PFG deems it necessary, in its good faith business judgment, in order to complete the enforcement of its rights under this Agreement or any other agreement; provided, however, that should PFG seek to take possession of any of the Collateral by court process, Borrower hereby irrevocably waives: (i) any bond and any surety or security relating thereto required by any statute, court rule or otherwise as an incident to such possession; (ii) any demand for possession prior to the commencement of any suit or action to recover possession thereof; and (iii) any requirement that PFG retain possession of, and not dispose of, any such Collateral until after trial or final judgment; (d) require Borrower to assemble any or all of the Collateral and make it available to PFG at places designated by PFG which are reasonably convenient to PFG and Borrower, and to remove the Collateral to such locations as PFG may deem advisable; (e) complete the processing, manufacturing or repair of any Collateral prior to a disposition thereof and, for such purpose and for the purpose of removal, PFG shall have the right to use Borrower's premises, vehicles, Equipment and all other Collateral without charge; (f) sell, lease or otherwise dispose of any of the Collateral, in its condition at the time PFG obtains possession of it or after further manufacturing, processing or repair, at one or more public and/or private sales, in lots or in bulk, for cash, exchange or other property, or on credit, and to adjourn any such sale from time to time without notice other than oral announcement at the time scheduled for sale (it being agreed that PFG shall have the right to conduct such disposition on Borrower's premises without charge, for such time or times as PFG deems reasonable, or on PFG's premises, or elsewhere; and the Collateral need not be located at the place of disposition; that PFG may directly or through any affiliated company purchase or lease any Collateral at any such public disposition, and if permissible under applicable law, at any private disposition; and that any sale or other disposition of Collateral shall not relieve Borrower of any liability Borrower may have if any Collateral is defective as to title or physical condition or otherwise at the time of sale); (g) demand payment of, and collect, any Accounts and General Intangibles comprising Collateral and, in connection therewith, Borrower irrevocably authorizes PFG to endorse or sign Borrower's name on all collections, receipts, instruments and other documents, to take possession of and open mail addressed to Borrower and remove therefrom payments made with respect to any item of the Collateral or proceeds thereof, and, in PFG's good faith business judgment, to grant extensions of time to pay, compromise claims and settle Accounts and the like for less than face value; (h) exercise any and all rights under any present or future Control Agreements relating to Deposit Accounts or Investment Property; and (i) demand and receive possession of any of Borrower's federal and state income tax returns and the books and records utilized in the preparation thereof or referring thereto. All Lender Expenses, liabilities and obligations incurred by PFG with respect to the foregoing shall be added to and become part of the Obligations, shall be due on demand, and shall bear interest at the Default Rate. Without limiting any of PFG's rights and remedies, from and after the occurrence and during the continuance of any Event of Default, the interest rate applicable to the Obligations shall be the Default Rate.

6.3 Standards for Determining Commercial Reasonableness. Borrower and PFG agree that a sale or other disposition (collectively, "sale") of any Collateral which complies with the following standards will conclusively be deemed to be commercially reasonable: (i) notice of the sale is given to Borrower at least ten days prior to the sale, and, in the case of a public sale, notice of the sale is published at least five days before the sale in a newspaper of general circulation in the county where the sale is to be conducted; (ii) notice of the sale describes the Collateral in general, non-specific terms; (iii) the sale is conducted at a place designated by PFG, with or without the Collateral being present; (iv) the sale commences at any time between 8:00 a.m. and 6:00 p.m.; and (v) payment of the purchase price in cash or by cashier's check or wire transfer is required. With respect to any sale of any of the Collateral, PFG may (but is not obligated to) direct any prospective purchaser to ascertain directly from Borrower any and all information concerning the same. PFG shall be free to employ other methods of noticing and selling the Collateral, in its discretion, if they are commercially reasonable. Borrower further acknowledges and agrees that if PFG's or

third parties' access to Collateral is inhibited, restricted or denied, it shall be commercially reasonable for PFG to conduct a sale of Collateral under such circumstances even though the lack of access to Collateral would likely give rise to a sale price less than if parties had unfettered access to Collateral for purposes of conducting a sale.

6.4 Power of Attorney. Upon the occurrence and during the continuance of any Event of Default, without limiting PFG's other rights and remedies, Borrower grants to PFG an irrevocable power of attorney coupled with an interest, authorizing and permitting PFG (acting through any of its employees, attorneys or agents) at any time, at its option, but without obligation, with or without notice to Borrower, and at Borrower's expense, to do any or all of the following, in Borrower's name or otherwise, but PFG agrees that if it exercises any right hereunder, it will do so in good faith and in a commercially reasonable manner and the exercise of any rights will be subject to the rights of the Senior Lender and any other Permitted Lien: (a) execute on behalf of Borrower any documents that PFG may, in its good faith business judgment, deem advisable in order to perfect and maintain PFG's security interest in the Collateral, or in order to exercise a right of Borrower or PFG, or in order to fully consummate all the transactions contemplated under this Agreement, and all other Loan Documents; (b) execute on behalf of Borrower any invoices relating to any Account, any draft against any Account Debtor and any notice to any Account Debtor, any proof of claim in bankruptcy, any Notice of Lien, claim of mechanic's, materialman's or other Lien, or assignment or satisfaction of mechanic's, materialman's or other Lien; (c) take control in any manner of any cash or non-cash items of payment or proceeds of Collateral; endorse the name of Borrower upon any instruments, or documents, evidence of payment or Collateral that may come into PFG's possession; (d) endorse all checks and other forms of remittances received by PFG; (e) pay, contest or settle any Lien, charge, encumbrance, security interest and adverse claim in or to any of the Collateral, or any judgment based thereon, or otherwise take any action to terminate or discharge the same; (f) grant extensions of time to pay, compromise claims and settle Accounts and General Intangibles for less than face value and execute all releases and other documents in connection therewith; (g) pay any sums required on account of Borrower's Taxes or to secure the release of any Liens therefor, or both; (h) settle and adjust, and give releases of, any insurance claim that relates to any of the Collateral and obtain payment therefor; (i) instruct any third party having custody or control of any books or records belonging to, or relating to, Borrower to give PFG the same rights of access and other rights with respect thereto as PFG has under this Agreement; (j) execute on behalf of Borrower and file in Borrower's name such documents and instruments as may be necessary or appropriate to effect the Transfer of Domain Rights into the name of PFG or its designees, and (k) take any action or pay any sum required of Borrower pursuant to this Agreement and any other Loan Documents. Any and all Lender Expenses incurred by PFG with respect to the foregoing shall be added to and become part of the Obligations, shall be payable on demand, and shall bear interest at a rate equal to the Default Rate. In no event shall PFG's rights under the foregoing power of attorney or any of PFG's other rights under this Agreement be deemed to indicate that PFG is in control of the business, management or properties of Borrower.

6.5 Application of Proceeds. All proceeds realized as the result of any sale of the Collateral shall be applied by PFG first to Lender Expenses incurred in the exercise of its rights under this Agreement, second to the interest due upon any of the Obligations, and third to the principal of the Obligations, in such order as PFG shall determine in its sole discretion. Any surplus shall be paid to Borrower or other persons legally entitled thereto and Borrower shall remain liable to PFG for any deficiency. If PFG, in its good faith business judgment, directly or indirectly enters into a deferred payment or other credit transaction with any purchaser at any sale of Collateral, PFG shall have the option, exercisable at any time, in its good faith business judgment, of either reducing the Obligations by the principal amount of purchase price or deferring the reduction of the Obligations until the actual receipt by PFG of the cash therefor.

6.6 Remedies Cumulative. In addition to the rights and remedies set forth in this Agreement, PFG shall have all the other rights and remedies accorded a secured party under the Code and under all other applicable laws, and under any other instrument or agreement now or in the future entered into between PFG and Borrower, and all of such rights and remedies are cumulative and none is exclusive. Exercise or partial exercise by PFG of one or more of its rights or remedies shall not be deemed an election, nor bar PFG from subsequent exercise or partial exercise of, any other rights or remedies. The failure or delay of PFG to exercise any rights or remedies shall not operate as a waiver thereof, but all rights and remedies shall continue in full force and effect until all of the Obligations have been fully paid and performed.

7. DEFINITIONS. As used in this Agreement, the following terms have the following meanings:

"Account Debtor" means the obligor on an Account.

"Accounts" means all present and future "accounts" as defined in the Code in effect on the Effective Date with such additions to such term as may hereafter be made, and includes without limitation all accounts receivable, healthcare receivables and other sums owing to Borrower.

"Affiliate" means, with respect to any Person, a relative, partner, shareholder, director, officer, or employee of such Person, or any parent or Subsidiary of such Person, or any Person directly or indirectly through any other Person controlling, controlled by or under common control with such Person.

"Billing Period" means monthly, unless another period or date for payment is specified under this Agreement (such as the Maturity Date), or (ii) such other period as PFG as may result from monetary Obligations not being outstanding during the entire period for which interest is being calculated (such as partial months if the Effective Date is not the first day of a calendar month), or (iii) such other period as PFG may notify in writing to Borrower. For the avoidance of doubt, under this Agreement, a "month" consists of 31 days in each January, March, May, July, August, October and December, 30 days in each other month except February, which consists of 28 days or, in a leap year, 29 days.

"Board" means the Board of Directors or other governing authority of Borrower as authorized in its Constitutional Documents (which for the avoidance of doubt, includes a member or manager of a limited liability company).

"Business Day" or "business day" means a day on which banks in the State of California are generally open for business.

"Cash" means unrestricted and unencumbered (except for the Liens of PFG and the Senior Lender) cash or cash equivalents in Deposit Accounts or other Collateral Accounts for which there is in effect a Control Agreement among Borrower, PFG and the depositary institution in respect of such accounts, unless the requirement for a Control Agreement has been waived by PFG.

"Cash Equivalents" means (a) marketable direct obligations issued or unconditionally guaranteed by the United States or any agency or any State thereof having maturities of not more than one (1) year from the date of acquisition; (b) commercial paper maturing no more than one (1) year after its creation and having a rating of at least A-1 or the equivalent thereof by Standard & Poor's Ratings Group or a rating of P-1 or the equivalent thereof by Moody's Investors Service, Inc.; (c) certificates of deposit, time deposits and bankers' acceptances maturing no more than one (1) year after the date of acquisition, and overnight bank deposits, in each case which are issued by a commercial bank organized under the laws of the United States or any state thereof, having capital and surplus in excess of $500,000,000; and (d) money market funds at least ninety-five percent (95%) of the assets of which constitute Cash Equivalents of the kinds described in clauses (a) through (c) of this definition and (e) Investments pursuant to Borrower's Investment Policy, provided that such investment policy (and any such amendment thereto) has been provided by Borrower to PFG and approved in writing by PFG.

"CD Accounts" means certificates of deposit with JP Morgan Chase Bank to secure Borrower's letter of credit with JP Morgan Chase Bank maintained as a security deposit for Borrower's lease of its headquarters premises, provided that the aggregate balance maintained in such certificates of deposit does not at any time exceed Three Hundred Six Thousand Dollars ($306,000.00) plus accrued interest, as the same may be increased from time to time in connection with the renegotiation of such lease or the negotiation of a lease for substitute space.

"Change in Control" means any event, transaction, or occurrence as a result of which any "person" (as such term is defined in Sections 3(a)(9) and 13(d)(3) of the Securities Exchange Act of 1934, as an amended (the "Exchange Act")), other than a trustee or other fiduciary holding securities under an employee benefit plan of Borrower, is or becomes a beneficial owner (within the meaning Rule 13d-3 promulgated under the Exchange Act), directly or indirectly, of securities of Borrower, representing forty nine percent (49%) or more of the combined voting power of Borrower's then outstanding securities in a single transaction or a series of related transactions (other than by the sale of Borrower's equity securities in a public offering or to venture capital or private equity investors so long as Borrower identifies to PFG the venture capital or private equity investors at least seven (7) Business Days prior to the initial closing of the transaction and provides to PFG a description of the material terms of the transaction and such other information as PFG may reasonably request).

"Code" means the Uniform Commercial Code as adopted and in effect in the State of California from time to time.

"Collateral" has the meaning set forth in Section 2 above.

"Collateral Account" is any Deposit Account, Securities Account or Commodity Account.

"Commodity Account" is any "commodity account" as defined in the Code with such additions to such term as may hereafter be made.

"Compliance Certificate" means a certificate, in the form set annexed hereto as Exhibit B, as such form may be amended from time to time upon advance notice from PFG and in the reasonable discretion of PFG.

"Constitutional Document" means, as to any Person, such Person's formation documents, as last certified by the Secretary of State (or equivalent Governmental Body) of such Person's jurisdiction of organization, together with, (a) if such Person is a corporation, its bylaws in current form, (b) if such Person is a limited liability company, its limited liability company agreement (or operating or similar agreement), (c) if such Person is a partnership, its partnership agreement (or similar agreement), and (d) if such Person is a statutory joint venture company or similar entity, its joint venture (or similar) agreement, each of the foregoing with all current amendments or modifications thereto.

"Contingent Obligation" is, for any Person, any direct or indirect liability, contingent or not, of that Person for (a) any indebtedness, lease, Dividend, letter of credit or other obligation of another such as an obligation, in each case directly or indirectly guaranteed, endorsed, co-made, discounted or sold with recourse by that Person, or for which that Person is directly or indirectly liable; (b) any obligations for undrawn letters of credit for the account of that Person; and (c) all obligations from any interest rate, currency or commodity swap agreement, interest rate cap or collar agreement, or other agreement or arrangement designated to protect a Person against fluctuation in interest rates, currency exchange rates or commodity prices; but "Contingent Obligation" does not include endorsements in the ordinary course of business. The amount of a Contingent Obligation is the stated or determined amount of the primary obligation for which the Contingent Obligation is made or, if not determinable, the maximum reasonably anticipated liability for it determined by the Person in good faith; but the amount may not exceed the maximum of the obligations under any guarantee or other support arrangement.

"continuing" and "during the continuance of" when used with reference to a Default or Event of Default means that the Default or Event of Default has occurred and has not been either waived in writing by PFG or cured within any applicable cure period.

"Control Agreement" means a written agreement among PFG, Borrower and a depositary bank or other custodian in respect of Borrower's Collateral Accounts by which the depositary bank or other custodian, as appropriate, agrees to comply with instructions given from time to time by PFG directing the disposition of the funds, investments and securities in Borrower's Collateral Accounts without further consent of Borrower, which instructions may include not complying with instructions (which term may include the honoring of checks written by Borrower against funds in said accounts) given by Borrower, and containing other terms acceptable to PFG.

"Current Depositary(ies)" means the banking and / or other financial institutions at which Borrower maintains Collateral Accounts on the Effective Date.

"Default" means any event which with notice or passage of time or both, would constitute an Event of Default.

"Default Rate" means the lesser of (i) the applicable rate(s) set forth in the Schedule, plus six percent (6%) per annum, and (ii) the maximum rate of interest that may lawfully be charged to a commercial borrower under applicable usury laws.

"Deposit Accounts" means all present and future "deposit accounts" as defined in the Code in effect on the Effective Date with such additions to such term as may hereafter be made, and includes without limitation all general and special bank accounts, demand accounts, checking accounts, savings accounts and certificates of deposit, and as used in this Agreement, the term "Deposit Accounts" shall be construed to also include securities, commodities and other Investment Property accounts.

"Dividend" means a payment or other distribution in respect to equity to an owner thereof, whether or not in respect of net profits. For the avoidance of doubt, "Dividends" include distributions to members of a limited liability company.

"Due Date" in relation to monetary Obligations payable from time to time by Borrower means (i) the date for payment specified in this Agreement (such as, on the first day of each calendar month for interest accrued during the prior month, as contemplated in Section 1.2) or in any other writing executed and delivered by PFG and Borrower from time to time, whether such payment is recurring, one-time or otherwise, or (ii) in the case of Obligations for which no date for payment is specified in this Agreement and which cannot be reasonably ascertained without an invoice from PFG, such as reimbursement of Lender Expenses, the date for payment specified in an invoice sent by or on behalf of PFG to Borrower.

"Equipment" means all present and future "equipment" as defined in the Code in effect on the Effective Date with such additions to such term as may hereafter be made, and includes without limitation all machinery, fixtures, goods, and any interest in any of the foregoing, except motor vehicles.

"Event of Default" means any of the events set forth in Section 6.1 of this Agreement.

"Financial Statements" means consolidated financial statements of Borrower, including a balance sheet, income statement and cash flow and, in the case of monthly-required financial statements, showing data for the month being reported and a history showing each month from the beginning of the relevant fiscal year.

"First-Priority" means, in relation to PFG's Lien in Collateral, a security interest that is prior to any other security interest, with the exception of the Liens of the Senior Lender and other Permitted Liens, which other Permitted Liens may only have superior priority to PFG's Lien with respect to specific items of Equipment.

"GAAP" means generally accepted accounting principles consistently applied.

"General Intangibles" means all present and future "general intangibles" as defined in the Code in effect on the Effective Date with such additions to such term as may hereafter be made, and includes without limitation all Intellectual Property, payment intangibles, royalties, contract rights, goodwill, franchise agreements, purchase orders, customer lists, route lists, telephone numbers, domain names, claims, income tax refunds, security and other deposits, options to purchase or sell real or personal property, rights in all litigation presently or hereafter pending (whether in contract, tort or otherwise), insurance policies (including without limitation key man, property damage, and business interruption insurance), payments of insurance and rights to payment of any kind.

"good faith business judgment" means honesty in fact and good faith (as defined in Section 1-201 of the Code) in the exercise of PFG's business judgment.

"Governmental Authorization" means any: (a) permit, license, certificate, franchise, concession, approval, consent, ratification, permission, clearance, confirmation, endorsement, waiver, certification, designation, rating, registration, qualification or authorization that is, has been issued, granted, given or otherwise made available by or under the authority of any Governmental Body or pursuant to any Legal Requirement; or (b) right under any contract with any Governmental Body.

"Governmental Body" means any of the following, in each case to the extent having jurisdiction over Borrower or any of its assets: (a) nation, principality, commonwealth, province, territory, county, municipality, district or other jurisdiction of any nature; (b) local, municipal, foreign or other government; (c) governmental or quasi-governmental authority of any nature (including any governmental division, subdivision, department, agency, bureau, branch, office, commission, council, board, court or other instrumentality); (d) multi-national organization or body; or (e) individual, entity or body exercising, or entitled to exercise, any executive, legislative, judicial, administrative, regulatory, police, military or taxing authority or power of any nature.

"including" means including (but not limited to).

"Indebtedness" means (a) indebtedness for borrowed money or the deferred purchase price of property or services (other than trade payables arising in the ordinary course of business), (b) obligations evidenced by bonds, notes, debentures or other similar instruments, (c) reimbursement obligations in connection with letters of credit, (d) capital lease obligations and (e) Contingent Obligations.

"Insolvency Proceeding" is any proceeding by or against any Person under the United States Bankruptcy Code, or any other bankruptcy or insolvency law in any jurisdiction, including assignments for the benefit of creditors, compositions, receiverships, administrations, extensions generally with its creditors, or proceedings seeking reorganization, arrangement, or other relief.

"Intellectual Property" means all present and future: (a) copyrights, copyright rights, copyright applications, copyright registrations and like protections in each work of authorship and derivative work thereof, whether published or unpublished, (b) trade secret rights, including all rights to unpatented inventions and know-how, and confidential information; (c) mask work or similar rights available for the protection of semiconductor chips; (d) patents, patent applications and like protections including without limitation improvements, divisions, continuations, renewals, reissues, extensions and continuations-in-part of the same; (e) trademarks, servicemarks, trade styles, and trade names, whether or not any of the foregoing are registered, and all applications to register and registrations of the same and like protections, and the entire goodwill of the business of Borrower connected with and symbolized by any such trademarks; (f) Domain Rights; (g) computer software and computer software products; (h) designs and design rights; (i) technology; (j) all claims for damages by way of past, present and future infringement of any of the rights included above; and (k) all licenses or other rights to use any property or rights of a type described above.

"Interest Expense" means for any fiscal period, interest expense (whether cash or non-cash) determined in accordance with GAAP for the relevant period ending on such date, including, in any event, interest expense with respect to any Credit Extension and other Indebtedness of Borrower, including, without limitation or duplication, all commissions, discounts, or related

amortization and other fees and charges with respect to letters of credit and bankers' acceptance financing and the net costs associated with interest rate swap, cap, and similar arrangements, and the interest portion of any deferred payment obligation (including leases of all types).

"Inventory" means all present and future "inventory" as defined in the Code in effect on the Effective Date with such additions to such term as may hereafter be made, and includes without limitation all merchandise, raw materials, parts, supplies, packing and shipping materials, work in process and finished products, including without limitation such inventory as is temporarily out of Borrower's custody or possession or in transit and including any returned goods and any documents of title representing any of the above.

"Investment" means any beneficial ownership interest in any Person (including any stock, partnership interest or other equity or debt securities issued by any Person), and any loan, advance or capital contribution to any Person.

"Investment Property" means all present and future investment property, securities, stocks, bonds, debentures, debt securities, partnership interests, limited liability company interests, options, security entitlements, securities accounts, commodity contracts, commodity accounts, and all financial assets held in any securities account or otherwise, and all options and warrants to purchase any of the foregoing, wherever located, and all other securities of every kind, whether certificated or uncertificated.

"Key Person" means Borrower's Chief Executive Officer and Chief Operating Officer, who are Panna Sharma (CEO) and John A. Roberts (COO), respectively, as of the Effective Date.

"Knowledge" or "best of knowledge" and words of similar import mean either (i) the actual knowledge, after reasonable investigation, of any of Borrower's executive officers, its Responsible Officer(s) and any persons succeeding or performing the responsibilities of such identified positions, and, if at any time Parent is not subject to the reporting requirements of the Exchange Act or is not current in such reporting (including as a result of a voluntary or involuntary delisting or "going dark") (ii) such knowledge as the persons in such identified positions would have assuming (A) Borrower policies in accordance with generally-accepted norms of corporate governance and (B) the actual exercise of reasonable diligence and prudence by such persons in accordance with such policies.

"Legal Requirement" means, as to any Person, the Constitutional Documents of such person and any written local, municipal, foreign or other law, statute, legislation, constitution, principle of common law, resolution, ordinance, code, edict, decree, proclamation, treaty, convention, rule, regulation, ruling, directive, pronouncement, requirement, specification, determination, decision, opinion or interpretation that is, has been issued, enacted, adopted, passed, approved, promulgated, made, implemented or otherwise put into effect by or under the authority of any Governmental Body, in each case applicable to or binding upon such Person or any of its property or to which such Person or any of its property is subject.

"Lender Expenses" means, in each case without limitation as to type and kind: reasonable Professional Costs, and all filing, recording, search, title insurance, appraisal, audit, and other reasonable costs incurred by PFG, pursuant to, or in connection with, or relating to this Agreement (whether or not a lawsuit is filed), including, but not limited to, Professional Costs PFG pays or incurs in order to do the following: (i) prepare and negotiate this Agreement and all present and future documents relating to this Agreement; (ii) obtain legal advice in connection with this Agreement or Borrower enforce, or seek to enforce, any of its rights or retain the services of consultants to do so; (iii) prosecute actions against, or defend actions by, Account Debtors; (iv) commence, intervene in, or defend any action or proceeding; (v) initiate any complaint to be relieved of the automatic stay in bankruptcy; (vi) file or prosecute any bankruptcy claim, third-party claim, or other claim; (vii) examine, audit, copy, and inspect any of the Collateral or any of Borrower's books and records, subject to Section 4.5; (viii) protect, obtain possession of, lease, dispose of, or otherwise enforce PFG's security interest in, the Collateral; and (ix) otherwise represent PFG in any litigation relating to Borrower.

"Lien" or "lien" is a security interest, claim, mortgage, deed of trust, levy, charge, pledge or other encumbrance of any kind, whether voluntarily incurred or arising by operation of law or otherwise against any property.

"Loan Documents" means, collectively, this Agreement, the Representations, and all other present and future documents, instruments and agreements between PFG and Borrower, including, but not limited to those relating to this Agreement, and all amendments and modifications thereto and replacements therefor.

"Material Adverse Change" means any of the following: (i) a material adverse change in the business, operations, or financial or other condition of Borrower and its Subsidiaries, taken as a whole, or (ii) a material impairment of the prospect of repayment of any portion of the Obligations; or (iii) a material impairment of the value or priority of PFG's security interests in the Collateral,

or (iv) PFG's determination, based upon information available to it and in its reasonable judgment, that there is a reasonable likelihood that Borrower shall fail to comply with one or more of the financial covenants in Section 5 of the Schedule during the next succeeding financial reporting period.

"Maturity Date" means the Maturity Date(s) set forth in Section 4 of the Schedule.

"Net Income" means, as calculated on a consolidated basis for Parent and its Subsidiaries for any period as at any date of determination, the net profit (or loss), after provision for taxes, of Parent and its Subsidiaries for such period taken as a single accounting period.

"New Subsidiary(ies)" means any person that becomes a Subsidiary of Borrower after the date hereof.

"Non-Borrower Subsidiary(ies)" means any direct or indirect Subsidiary of Borrower not joined as a co-Borrower hereunder and otherwise joined to the Loan Documents.

"Non-Overdue Senior Monetary Obligations" means, at any time, the amount of monetary Obligations other than principal Indebtedness owed by Borrower to the Senior Lender but not then due, such as accrued and unpaid interest not yet due.

"Non-U.S. Subsidiary" means a Subsidiary not organized under the laws of (i) any state or commonwealth of the United States or (ii) the District of Columbia.

"Obligations" means the Loan and all other advances, debts, liabilities, obligations, guaranties, covenants, duties and indebtedness at any time owing by Borrower to PFG, including obligations and covenants intended to survive the termination of this Agreement, whether evidenced by this Agreement or any note or other instrument or document, or otherwise, including indebtedness under any obligation to purchase equity derivatives (including stock warrants) purchased or otherwise issued to PFG from time to time, whether arising from an extension of credit, opening of a letter of credit, banker's acceptance, loan, guaranty, indemnification or otherwise, whether direct or indirect (including, without limitation, those acquired by assignment and any participation by PFG in Borrower's debts owing to others), absolute or contingent, due or to become due, including, without limitation, all interest, charges, expenses, fees, attorney's fees, expert witness fees, audit fees, collateral monitoring fees, closing fees, facility fees, commitment fees, contingent fees, back-end and performance-based fees, termination fees, minimum interest charges and any other sums chargeable to Borrower under this Agreement or under any other Loan Documents; but shall not include inchoate indemnification obligations or obligations under the Warrant.

"Ordinary (or "ordinary") course of business" and derivatives shall apply to an action taken or an action required to be taken and not taken by or on behalf of a Borrower. An action will not be deemed to have been taken in the "ordinary course of business" *unless*: (a) such action is consistent with its past practices (if such type of action has been taken in the past and, if not, such action shall be deemed not in the ordinary course of business) and is similar in nature and magnitude to actions customarily taken by it; (b) such action is taken in accordance with sound and prudent business practices in its jurisdiction of organization; and (c) such action is not required to be authorized by its shareholders and does not require any other separate or special authorization of any nature.

"Other Property" means the following as defined in the Code in effect on the Effective Date with such additions to such terms as may hereafter be made, and all rights relating thereto: all present and future "commercial tort claims" (including without limitation any commercial tort claims identified in the Representations), "documents", "instruments", "promissory notes", "chattel paper", "letters of credit", "letter-of-credit rights", "fixtures", "farm products" and "money"; and all other goods and personal property of every kind, tangible and intangible, whether or not governed by the Code.

"Parent" has the meaning set forth in the heading to this Agreement.

"Payment" means all checks, wire transfers and other items of payment received by PFG for credit to Borrower's outstanding Obligations.

"Permitted Indebtedness" means:

(i) the Loan and other Obligations;

(ii) Indebtedness existing on the Effective Date and shown on Exhibit A hereto;

(iii) Subordinated Debt;

(iv) Indebtedness owing to Senior Lender not to exceed the Senior Debt Limit specified in the Schedule;

(v) other Indebtedness secured by Permitted Liens described in clauses (i) and (iii) of that definition;

(vi) unsecured Indebtedness to trade creditors incurred in the ordinary course of business, and Indebtedness described in item (iv) of the definition of Permitted Liens;

(vii) extensions, refinancings, modifications, amendments and restatements of any items of Permitted Indebtedness (i) through (vi) above, provided that the principal amount thereof is not increased or the terms thereof are not modified to impose materially more burdensome terms upon Borrower.

"Permitted Investments" are:

(i) Investments (if any) shown on Exhibit A and existing on the Effective Date;

(ii) Investments consisting of Cash Equivalents;

(iii) Investments consisting of the endorsement of negotiable instruments for deposit or collection or similar transactions in the ordinary course of Borrower;

(iv) Investments consisting of (A) lease security deposits and (B) the CD Accounts;

(iv) Investments in Subsidiaries existing on the Effective Date;

(v) Investments not exceeding Five Hundred Thousand Dollars ($500,000.00) in any fiscal year in Oncospire; and

(vi) Investments by Borrower in Subsidiaries not to exceed Seven Hundred Fifty Thousand Dollars ($750,000) in the aggregate for any rolling four (4) quarter period, provided no Event of Default exists and no Event of Default would result from such Investment.

"Permitted Liens" means the following:

(i) purchase money Liens (including Liens arising under any retention of title, hire purchase or conditional sales arrangement or arrangements having similar effect) (i) on Equipment acquired or held by Borrower incurred for financing the acquisition of the Equipment securing no more than $500,000 in the aggregate amount outstanding, or (ii) existing on such Equipment when acquired, if the Lien is confined to the property and improvements and the proceeds of the Equipment;

(ii) Liens for Taxes not yet payable;

(iii) additional Liens consented to in writing by PFG, which consent may be withheld in its good faith business judgment. PFG shall have the right to require, as a condition to its consent under this subparagraph (iii), that the holder of the additional Lien sign a subordination agreement in PFG's then standard form, acknowledge that the security interest is subordinate to the security interest in favor of PFG, and agree not to take any action to enforce its subordinate security interest so long as any Obligations remain outstanding, and that Borrower agrees that any uncured default in any obligation secured by the subordinate security interest shall also constitute an Event of Default under this Agreement;

(iv) Liens of materialmen, mechanics, warehousemen, carriers, or other similar Liens arising in the ordinary course of business and securing obligations which are not delinquent;

(v) Liens being terminated substantially concurrently with this Agreement;

(vi) Liens to secure payment of workers' compensation, employment insurance, old-age pensions, social security and other like obligations incurred in the ordinary course of business (other than Liens imposed by ERISA);

(vii) Liens incurred in connection with the extension, renewal or refinancing of the indebtedness secured by Liens of the type described above in clauses (i), (ii), (iii) and (x), provided that any extension, renewal or replacement Lien is limited to the property encumbered by the existing Lien and the principal amount of the indebtedness being extended, renewed or refinanced does not increase and other terms are not less favorable to Borrower;

(viii) Liens in favor of customs and revenue authorities which secure payment of customs duties in connection with the importation of goods;

(ix) non-exclusive licenses of Intellectual Property granted to third parties in the ordinary course of business; and

(x) Liens in favor of Senior Lender.

"Person" means any individual, sole proprietorship, partnership, joint venture, trust, unincorporated organization, association, corporation, government, or any agency or political division thereof, or any other entity.

"Professional Costs" means all reasonable fees and expenses of auditors, accountants, valuation experts, Collateral disposition service providers, restructuring and other advisory services in connection with restructurings, workouts and Insolvency Proceedings, and fees and costs of attorneys.

"Qualifying Request" means a request made by a Responsible Officer of Borrower under Section 1.4 for (i) a Loan (A) that is within Borrower's borrowing availability under this Agreement, (B) that satisfies the relevant conditions set forth in Section 9 of the Schedule, (C) that is accompanied by such certificates, documents and instruments as may be required under this Agreement or otherwise reasonably required by PFG to confirm Borrower's compliance with the Loan Documents at the time of such request, and (D) that is made within 30 days of the date the Reporting package is required to be delivered (as specified in Section 6 of the Schedule) showing satisfaction of the relevant borrowing conditions, or (ii) any other matter for which PFG's consent is required under the Loan Documents.

"Representations" means the written Representations and Warranties provided by Borrower to PFG referred to in the Schedule.

"Responsible Officer(s)" means Panna Sharma, John A. Roberts and any other officer of Parent identified in writing by a Responsible Officer.

"Restricted License" means any material license or other agreement with respect to which Borrower is the licensee (a) that prohibits or otherwise restricts Borrower from granting a Lien in favor of PFG on Borrower's interest therein or (b) for which a default under or termination of could interfere with PFG's right to sell any Collateral.

"Revenue(s)" means revenues required to be recognized as such under GAAP.

"SEC" means the United States Securities and Exchange Commission.

"SEC Filing(s)" means Borrower's periodic and other reports, proxy statements and other material filed by Borrower with the SEC, any Governmental Body succeeding to any or all of the functions of the SEC or with any national securities exchange (such as the NASDAQ), or distributed to its stockholders, as the case may be, and such documents required to be delivered pursuant to the terms hereof (to the extent any such documents are included in materials otherwise filed with the SEC) may be delivered electronically and if so delivered, shall be deemed to have been delivered on the date on which Borrower posts such documents, or provides a link thereto, on Borrower's website on the internet at Borrower's website address; provided, however, Borrower shall promptly notify PFG in writing (which may be by electronic mail) of the posting of any such documents.

"Securities Account" is any "securities account" as defined in the Code with such additions to such term as may hereafter be made.

"Security Instruments" means financing statements and similar notices filed under the Code or other relevant local law (U.S. or non-U.S.) in any jurisdiction in which such financing statements may be filed, fixed and floating charges, share charges, mortgage debentures, and any other notices, instruments and filings that reflect the "all assets" security granted to PFG by Borrower in this Agreement and the other Loan Documents.

"Senior Debt" has the meaning set forth in Section 8 of the Schedule and "Senior Debt Documents" means the agreements and instruments between or in respect of Borrower and the Senior Lender reflecting the Senior Debt.

"Senior Lender" has the meaning set forth in Section 8 of the Schedule.

"Subordinated Debt" means debt incurred by Borrower subordinated to Borrower's debt to PFG pursuant to a subordination agreement entered into between PFG, Borrower and the subordinated creditor(s) upon terms acceptable to PFG in its sole business discretion, but which may at PFG's option include: (i) subordination of subordinated creditor Lens, (ii) restrictions or prohibition of payments on subordinated debt until all Obligations to PFG are fully repaid and performed, and (iii) a prohibition on the exercise of remedies by a subordinated creditor until all Obligations to PFG are fully repaid and performed.

"Senior Lender Subordination Agreement" means that certain Subordination Agreement, dated as of the date hereof, by and between PFG and Senior Lender.

"Subsidiary" is, as to any Person, a corporation, partnership, limited liability company or other entity of which shares of stock or other ownership interests having ordinary voting power (other than stock or such other ownership interests having such power only by reason of the happening of a contingency) to elect a majority of the board of directors or other managers of such

corporation, partnership or other entity are at the time owned, or the management of which is otherwise controlled, directly or indirectly through one or more intermediaries, or both, by such Person. Unless the context otherwise requires, each reference to a Subsidiary herein shall be a reference to a Subsidiary of Borrower or Guarantor.

"Tax" means any tax (including any income tax, franchise tax, capital gains tax, estimated tax, gross receipts tax, value-added tax, surtax, excise tax, ad valorem tax, transfer tax, stamp tax, sales tax, use tax, property tax, business tax, occupation tax, inventory tax, occupancy tax, withholding tax or payroll tax), levy, assessment, tariff, impost, imposition, toll, duty (including any customs duty), deficiency or fee, and any related charge or amount (including any fine, penalty or interest), that is, has been or may in the future be (a) imposed, assessed or collected by or under the authority of any Governmental Body, or (b) payable pursuant to any tax-sharing agreement or similar contract.

"Tax Return" means any return (including any information return), report, statement, declaration, estimate, schedule, notice, notification, form, election, certificate or other document or information that is, has been or may in the future be filed with or submitted to, or required to be filed with or submitted to, any Governmental Body in connection with the determination, assessment, collection or payment of any Tax or in connection with the administration, implementation or enforcement of or compliance with any Legal Requirement relating to any Tax.

"Transfer" or "transfer" shall include any sale, assignment with or without consideration, encumbrance, hypothecation, pledge, or other transfer or disposition of any kind, including, but not limited to, transfers to receivers, levying creditors, trustees or receivers in bankruptcy proceedings or general assignees for the benefit of creditors, whether voluntary or by operation of law, directly or indirectly, but shall exclude non-exclusive licenses of Intellectual Property in the ordinary course of Borrower's Business.

Other Terms. All accounting terms used in this Agreement, unless otherwise indicated, shall have the meanings given to such terms in accordance with GAAP, consistently applied. All other terms contained in this Agreement, unless otherwise indicated, shall have the meanings provided by the Code, to the extent such terms are defined therein.

8. GENERAL PROVISIONS.

8.1 Confidentiality. PFG agrees to use the same degree of care that it exercises with respect to its own proprietary information, to maintain the confidentiality of any and all proprietary, trade secret or other information identified by Borrower as confidential provided to or received by PFG from Borrower, including business plans and forecasts, non-public financial information, confidential or secret processes, formulae, devices and contractual information, customer lists, and employee relation matters, provided that PFG may disclose such information (i) to its officers, directors, employees, attorneys, accountants, affiliates, and advisory boards (provided they are informed of the confidential nature of the information and instructed to keep it confidential), (ii) subject to an agreement containing provisions substantially the same as this Section, to any participants, prospective participants, assignees and prospective assignees, (iii) to such other Persons to whom PFG shall at any time be required to make such disclosure in accordance with applicable law or legal process, and (iv) in its good faith business judgment in connection with the enforcement of its rights or remedies after an Event of Default, or in connection with any dispute with Borrower or any other Person relating to Borrower. The confidentiality agreement in this Section supersedes any prior confidentiality agreement of PFG relating to Borrower.

8.2 Interest Computation. In computing interest on the Obligations, all Payments received after 12:00 Noon, Pacific Time, on any day shall be deemed received on the next Business Day.

8.3 Payments. All Payments may be applied, and in PFG's good faith business judgment reversed and re-applied, to the Obligations, in such order and manner as PFG shall determine in its good faith business judgment.

8.4 Monthly Accountings. PFG may provide Borrower monthly with an account of advances, charges, expenses and payments made pursuant to this Agreement. Such account shall be deemed correct, accurate and binding on Borrower and an account stated (except for reverses and reapplications of payments made and corrections of errors discovered by PFG), unless Borrower notifies PFG in writing to the contrary within 60 days after such account is rendered, describing the nature of any alleged errors or omissions.

8.5 Notices. All notices to be given under this Agreement shall be in writing and shall be given either personally, or by reputable private delivery service, or by regular first-class mail, or certified mail return receipt requested, or by fax to the most recent fax number a party has for the other party (and if by fax, sent concurrently by one of the other methods provided herein), or by electronic mail to the most recent electronic mail address for Borrower provided for the chief financial officer or financial controller executing the Representations (and if by electronic mail, with an electronic delivery and/or read receipt), addressed

to PFG or Borrower at the addresses shown in the heading to this Agreement, in the Representations or at any other address designated in writing by one party to the other party. All notices shall be deemed to have been given upon delivery in the case of notices personally delivered, or at the expiration of one Business Day following delivery to the private delivery service, or two Business Days following the deposit thereof in the United States mail, with postage prepaid, or on the first business day of receipt during business hours in the case of notices sent by fax or electronic mail, as provided herein.

8.6 Authorization to Use Borrower Name, Etc. Borrower irrevocably authorizes PFG to: (i) use Borrower's logo on PFG's website and in its marketing materials to denote the lending relationship between PFG and Borrower; (ii) use a "tombstone" to highlight the transaction(s) from time to time between PFG and Borrower; and (iii) to issue press releases in a form reasonable acceptable to Borrower and PFG highlighting and summarizing the credit facilities extended by PFG to Borrower from time to time under this Agreement, as amended from time to time, all of the above (i) through (iii), for marketing purposes.

8.7 Severability. Should any provision of this Agreement be held by any court of competent jurisdiction to be void or unenforceable, such defect shall not affect the remainder of this Agreement, which shall continue in full force and effect.

8.8 Integration. This Agreement and such other written agreements, documents and instruments as may be executed in connection herewith are the final, entire and complete agreement between Borrower and PFG and supersede all prior and contemporaneous negotiations and oral representations and agreements, all of which are merged and integrated in this Agreement. There are no oral understandings, representations or agreements between the parties which are not set forth in this Agreement or in other written agreements signed by the parties in connection herewith.

8.9 Waivers; Indemnity. The failure of PFG at any time or times to require Borrower to strictly comply with any of the provisions of this Agreement or any other Loan Document shall not waive or diminish any right of PFG later to demand and receive strict compliance therewith. Any waiver of any default shall not waive or affect any other default, whether prior or subsequent, and whether or not similar. None of the provisions of this Agreement or any other Loan Document shall be deemed to have been waived by any act or knowledge of PFG or its agents or employees, but only by a specific written waiver signed by an authorized officer of PFG and delivered to Borrower. Borrower waives the benefit of all statutes of limitations relating to any of the Obligations or this Agreement or any other Loan Document, and Borrower waives demand, protest, notice of protest and notice of default or dishonor, notice of payment and nonpayment, release, compromise, settlement, extension or renewal of any commercial paper, instrument, account, General Intangible, document or guaranty at any time held by PFG on which Borrower is or may in any way be liable, and notice of any action taken by PFG, unless expressly required by this Agreement. Borrower hereby agrees to indemnify PFG and its affiliates, subsidiaries, parent, directors, officers, employees, agents, and attorneys, and to hold them harmless from and against any and all claims, debts, liabilities, demands, obligations, actions, causes of action, penalties and Lender Expenses of every kind, which they may sustain or incur based upon or arising out of any of the Obligations, or any relationship or agreement between PFG and Borrower, or any other matter, relating to Borrower or the Obligations; provided that this indemnity shall not extend to damages determined by a court of competent jurisdiction in a final judgment to have been proximately caused by the indemnitee's own gross negligence or willful misconduct. Notwithstanding any provision in this Agreement to the contrary, the indemnity agreement set forth in this Section shall survive any termination of this Agreement and shall for all purposes continue in full force and effect.

8.10 No Liability for Ordinary Negligence. Borrower agrees that any and all claims it may have under this Agreement shall be limited to claims against PFG and not its directors, officers, employees, agents, attorneys or any other Person affiliated with or representing PFG. Neither PFG, nor any of its directors, officers, employees, agents, attorneys or any other Person affiliated with or representing PFG shall be liable for any claims, demands, losses or damages, of any kind whatsoever, made, claimed, incurred or suffered by Borrower or any other party through the negligence of PFG, or any of its directors, officers, employees, agents, attorneys or any other Person affiliated with or representing PFG, but nothing herein shall relieve PFG from liability for its own gross negligence or willful misconduct.

8.11 Amendment. The terms and provisions of this Agreement may not be waived or amended, except in a writing executed by Borrower and a duly authorized officer of PFG. No purported amendment or modification of any Loan Document, or waiver, discharge or termination of any obligation under any Loan Document, shall be enforceable or admissible unless, and only to the extent, expressly set forth in a writing signed by the party against which enforcement or admission is sought. Without limiting the generality of the foregoing, no oral promise or statement, nor any action, inaction, delay, failure to require performance or course of conduct shall operate as, or evidence, an amendment, supplement or waiver or have any other effect on any Loan Document. Any waiver granted shall be limited to the specific circumstance expressly described in it, and shall not apply to any subsequent or other circumstance, whether similar or dissimilar, or give rise to, or evidence, any obligation or commitment to grant any further waiver.

8.12 Time of Essence. Time is of the essence in the performance by Borrower of each and every obligation under this Agreement.

8.13 Lender Expenses. Borrower shall reimburse PFG for all Lender Expenses. All Lender Expenses to which PFG may be entitled pursuant to this Paragraph shall immediately become part of Borrower's Obligations, shall be due on demand, and if not paid within three (3) Business Days after demand, shall bear interest at the Default Rate.

8.14 Benefit of Agreement. The provisions of this Agreement shall be binding upon and inure to the benefit of the respective successors, assigns, heirs, beneficiaries and representatives of Borrower and PFG; provided, however, that Borrower may not assign or Transfer any of its rights under this Agreement without the prior written consent of PFG, and any prohibited assignment shall be void. No consent by PFG to any assignment shall release Borrower from its liability for the Obligations.

8.15 Joint and Several Liability. If Borrower consists of more than one Person, their liability shall be joint and several, and the compromise of any claim with, or the release of, any Borrower shall not constitute a compromise with, or a release of, any other Borrower.

8.16 Limitation of Actions. Any claim or cause of action by Borrower against PFG, its directors, officers, employees, agents, accountants or attorneys, based upon, arising from, or relating to this Loan Agreement, or any other Loan Document, or any other transaction contemplated hereby or thereby or relating hereto or thereto, or any other matter, cause or thing whatsoever, incurred, done, omitted or suffered to be done by PFG, its directors, officers, employees, agents, accountants or attorneys, shall be barred unless asserted by Borrower by the commencement of an action or proceeding in a court of competent jurisdiction by (a) the filing of a complaint within one year after the earlier to occur of (i) the first act, occurrence or omission upon which such claim or cause of action, or any part thereof, is based, or (ii) the date this Agreement is terminated, and (b) the service of a summons and complaint on an officer of PFG, or on any other person authorized to accept service on behalf of PFG, within thirty (30) days thereafter. Borrower agrees that such one-year period is a reasonable and sufficient time for Borrower to investigate and act upon any such claim or cause of action. The one-year period provided herein shall not be waived, tolled, or extended except by the written consent of PFG in its sole discretion. This provision shall survive any termination of this Loan Agreement or any other Loan Document.

8.17 Loan Monitoring. At reasonable times and upon reasonable advance notice to Borrower, PFG shall have the right to visit personally with Borrower up to two times per calendar year at its principal place of business or such other location as the parties may mutually agree, for the purpose of meeting with Borrower's management in order to remain as up-to-date with Borrower's business as is practicable and to maintain best practices in terms of lender loan monitoring and diligence. Lender Expenses incurred for reasonable travel, lodging and similar expenses for up to two PFG staff for such visits shall be at Borrower's expense and reimbursed in the same manner as other PFG expenses under this Agreement.

8.18 Paragraph Headings; Construction; Counterparts. Paragraph headings are only used in this Agreement for convenience. Borrower and PFG acknowledge that the headings may not describe completely the subject matter of the applicable paragraph, and the headings shall not be used in any manner to construe, limit, define or interpret any term or provision of this Agreement. This Agreement has been fully reviewed and negotiated between the parties with the benefit of independent counsel and no uncertainty or ambiguity in any term or provision of this Agreement shall be construed strictly against PFG or Borrower under any rule of construction or otherwise. References to "Borrower" are construed to mean "each Borrower", unless otherwise expressly specified. Amounts set off in brackets or parentheses are negative. The word "shall" is mandatory, the word "may" is permissive, and the word "or" is not exclusive. The term "Agreement" includes the Schedule and (if not otherwise specified) any amendment, modification, restatement or other writing amending the terms of this Agreement. Obligations of a similar nature addressed in different sections of this Agreement shall be deemed supplemental to one another and not exclusive unless expressly set forth as such. Words and phrases expressing examples, including "for example" and "such as" are non-exclusive. This Agreement may be executed in any number of counterparts and by different parties on separate counterparts, each of which, when executed and delivered, is an original, and all taken together, constitute one Agreement.

8.19 Correction of Loan Documents. PFG may correct patent errors and fill in any blanks in the Loan Documents consistent with the agreement of the parties so long as PFG provides Borrowers with written notice of such correction and allows Borrower at least ten (10) days to object to such correction. In the event of such objection, such correction shall not be made except by an amendment signed by both PFG and Borrower.

8.20 Governing Law; Jurisdiction; Venue. This Agreement and all acts and transactions hereunder and all rights and obligations of PFG and Borrower shall be governed by the laws of the State of California. As a material part of the consideration to PFG to enter into this Agreement, Borrower (i) agrees that all actions and proceedings relating directly or indirectly to this

Agreement shall be litigated in courts located within California and that the exclusive venue therefor shall, at PFG's option, be Santa Clara County; (ii) consents to the jurisdiction and venue of any such court and consents to service of process in any such action or proceeding by personal delivery or by internationally-recognized commercial courier or overnight delivery service or by certified mail, return receipt requested, to the last known address for Borrower; and (iii) waives any and all rights Borrower may have to object to the jurisdiction of any such court, or to transfer or change the venue of any such action or proceeding. Notwithstanding the foregoing, PFG, in pursuit of collection and Collateral or rights therein, may pursue remedies in any jurisdiction in which Borrower or any Collateral resides or is deemed to reside.

8.21 Withholding. Payments received by PFG from Borrower under this Agreement will be made free and clear of and without deduction for any and all present or future taxes, levies, imposts, duties, deductions, withholdings, assessments, fees or other charges imposed by any Governmental Body (including any interest, additions to tax or penalties applicable thereto). Specifically, however, if at any time any Governmental Body, applicable law, regulation or international agreement requires Borrower to make any withholding or deduction from any such payment or other sum payable hereunder to PFG, Borrower hereby covenants and agrees that the amount due from Borrower with respect to such payment or other sum payable hereunder will be increased to the extent necessary to ensure that, after the making of such required withholding or deduction, PFG receives a net sum equal to the sum which it would have received had no withholding or deduction been required, and Borrower shall pay the full amount withheld or deducted to the relevant Governmental Body. Borrower will, upon request, furnish PFG with proof reasonably satisfactory to PFG indicating that Borrower has made such withholding payment; provided, however, that Borrower need not make any withholding payment if the amount or validity of such withholding payment is contested in good faith by appropriate and timely proceedings and as to which payment in full is bonded or reserved against by Borrower. The agreements and obligations of Borrower contained in this Section 8.21 shall survive the termination of this Agreement.

8.22 Multiple Borrowers; Suretyship Waivers. If there is at any time after the Effective Date more than one Borrower:

(a) Borrowers' Agent. Each Borrower hereby irrevocably appoints each other Borrower, as the agent, attorney-in-fact and legal representative of all Borrowers for all purposes, including requesting disbursement of the Loan and receiving account statements and other notices and communications to Borrowers (or any of them) from PFG. PFG may rely, and shall be fully protected in relying, on any request in relation to the Loan, disbursement instruction, report, information or any other notice or communication made or given by any Borrower, whether in its own name, as Borrowers' agent, or on behalf of one or more Borrowers, and PFG shall not have any obligation to make any inquiry or request any confirmation from or on behalf of any other Borrower as to the binding effect on it of any such request, instruction, report, information, other notice or communication, nor shall the joint and several character of Borrowers' obligations hereunder be affected thereby.

(b) Waivers. Each Borrower hereby waives: (i) any right to require PFG to institute suit against, or to exhaust its rights and remedies against, any other Borrower or any other Person, or to proceed against any property of any kind which secures all or any part of the Obligations, or to exercise any right of offset or other right with respect to any reserves, credits or deposit accounts held by or maintained with PFG or any indebtedness of PFG to any other Borrower, or to exercise any other right or power, or pursue any other remedy PFG may have; (ii) any defense arising by reason of any disability or other defense of any other Borrower or any guarantor or any endorser, co-maker or other Person, or by reason of the cessation from any cause whatsoever of any liability of any other Borrower or any guarantor or any endorser, co-maker or other Person, with respect to all or any part of the Obligations, or by reason of any act or omission of PFG or others which directly or indirectly results in the discharge or release of any other Borrower or any guarantor or any other Person or any Obligations or any security therefor, whether by operation of law or otherwise; (iii) any defense arising by reason of any failure of PFG to obtain, perfect, maintain or keep in force any Lien on, any property of any Borrower or any other Person; (iv) any defense based upon or arising out of any Insolvency Proceeding, liquidation or dissolution proceeding commenced by or against or in respect of any Borrower or any guarantor or any endorser, co-maker or other Person, including without limitation any discharge of, or bar against collecting, any of the Obligations (including without limitation any interest thereon), in or as a result of any such proceeding. Until all of the Obligations have been paid, performed, and discharged in full, nothing shall discharge or satisfy the liability of Borrower hereunder except the full performance and payment of all of the Obligations. If any claim is ever made upon PFG for repayment or recovery of any amount or amounts received by PFG in payment of or on account of any of the Obligations, because of any claim that any such payment constituted a preferential Transfer or fraudulent conveyance, or for any other reason whatsoever, and PFG repays all or part of said amount by reason of any judgment, decree or order of any court or administrative body having jurisdiction over PFG or any of its property, or by reason of any settlement or compromise of any such claim effected by PFG with any such claimant (including without limitation the any other Borrower), then and in any such event, Borrower agrees that any such judgment, decree, order, settlement and compromise shall be binding upon Borrower, notwithstanding any revocation

or release of this Agreement or the cancellation of any note or other instrument evidencing any of the Obligations, or any release of any of the Obligations, and Borrower shall be and remain liable to PFG under this Agreement for the amount so repaid or recovered, to the same extent as if such amount had never originally been received by PFG, and the provisions of this sentence shall survive, and continue in effect, notwithstanding any revocation or release of this Agreement. Each Borrower hereby expressly and unconditionally waives all rights of subrogation, reimbursement and indemnity of every kind against any other Borrower, and all rights of recourse to any assets or property of any other Borrower, and all rights to any collateral or security held for the payment and performance of any Obligations, including (but not limited to) any of the foregoing rights which Borrower may have under any present or future document or agreement with any other Borrower or other Person, and including (but not limited to) any of the foregoing rights which Borrower may have under any equitable doctrine of subrogation, implied contract, or unjust enrichment, or any other equitable or legal doctrine. Each Borrower further hereby waives any other rights and defenses that are or may become available to Borrower by reason of California Civil Code Sections 2787 to 2855 (inclusive), 2899, and 3433, as now in effect or hereafter amended, and under all other similar statutes and rules now or hereafter in effect.

(c) Consents. Each Borrower hereby consents and agrees that, without notice to or by Borrower and without affecting or impairing in any way the obligations or liability of Borrower hereunder, PFG may, from time to time before or after revocation of this Agreement, do any one or more of the following in PFG's sole and absolute discretion: (i) accept partial payments of, compromise or settle, renew, extend the time for the payment, discharge, or performance of, refuse to enforce, and release all or any parties to, any or all of the Obligations; (ii) grant any other indulgence to any Borrower or any other Person in respect of any or all of the Obligations or any other matter; (iii) accept, release, waive, surrender, enforce, exchange, modify, impair, or extend the time for the performance, discharge, or payment of, any and all property of any kind securing any or all of the Obligations or any guaranty of any or all of the Obligations, or on which PFG at any time may have a Lien, or refuse to enforce its rights or make any compromise or settlement or agreement therefor in respect of any or all of such property; (iv) substitute or add, or take any action or omit to take any action which results in the release of, any one or more other Borrowers or any endorsers or guarantors of all or any part of the Obligations, including, without limitation one or more parties to this Agreement, regardless of any destruction or impairment of any right of contribution or other right of Borrower; (v) apply any sums received from any other Borrower, any guarantor, endorser, or co-signer, or from the disposition of any Collateral or security, to any indebtedness whatsoever owing from such Person or secured by such Collateral or security, in such manner and order as PFG determines in its sole discretion, and regardless of whether such indebtedness is part of the Obligations, is secured, or is due and payable. Borrower consents and agrees that PFG shall be under no obligation to marshal any assets in favor of Borrower, or against or in payment of any or all of the Obligations. Borrower further consents and agrees that PFG shall have no duties or responsibilities whatsoever with respect to any property securing any or all of the Obligations. Without limiting the generality of the foregoing, PFG shall have no obligation to monitor, verify, audit, examine, or obtain or maintain any insurance with respect to, any property securing any or all of the Obligations.

(d) Independent Liability. Each Borrower hereby agrees that one or more successive or concurrent actions may be brought hereon against Borrower, in the same action in which any other Borrower may be sued or in separate actions, as often as deemed advisable by PFG. Each Borrower is fully aware of the financial condition of each other Borrower and is executing and delivering this Agreement based solely upon its own independent investigation of all matters pertinent hereto, and Borrower is not relying in any manner upon any representation or statement of PFG with respect thereto. Each Borrower represents and warrants that it is in a position to obtain, and each Borrower hereby assumes full responsibility for obtaining, any additional information concerning any other Borrower's financial condition and any other matter pertinent hereto as Borrower may desire, and Borrower is not relying upon or expecting PFG to furnish to it any information now or hereafter in PFG's possession concerning the same or any other matter.

(e) Subordination. All indebtedness of a Borrower now or hereafter arising held by another Borrower is subordinated to the Obligations and Borrower holding the indebtedness shall take all actions reasonably requested by PFG to effect, to enforce and to give notice of such subordination.

8.23 Electronic Execution of Documents. The words “execution,” “signed,” “signature” and words of like import in any Loan Document shall be deemed to include electronic signatures or the keeping of records in electronic form, each of which shall be of the same legal effect, validity and enforceability as a manually executed signature or the use of a paper-based recordkeeping systems, as the case may be, to the extent and as provided for in any applicable law, including, without limitation, any state law based on the Uniform Electronic Transactions Act.

8.24 Relationship. The relationship of the parties to this Agreement is determined solely by the provisions of this Agreement. The parties do not intend to create any agency, partnership, joint venture, trust, fiduciary or other relationship with duties or incidents different from those of parties to an arm's-length contract.

8.25 Third Parties. Nothing in this Agreement, whether express or implied, is intended to: (a) confer any benefits, rights or remedies under or by reason of this Agreement on any persons other than the express parties to it and their respective permitted successors and assigns; (b) relieve or discharge the obligation or liability of any person not an express party to this Agreement; or (c) give any person not an express party to this Agreement any right of subrogation or action against any party to this Agreement.

8.26 Mutual Waiver of Jury Trial. **BORROWER AND PFG EACH HEREBY WAIVE THE RIGHT TO TRIAL BY JURY IN ANY ACTION OR PROCEEDING BASED UPON, ARISING OUT OF, OR IN ANY WAY RELATING TO, THIS AGREEMENT OR ANY OTHER PRESENT OR FUTURE INSTRUMENT OR AGREEMENT BETWEEN PFG AND BORROWER, OR ANY CONDUCT, ACTS OR OMISSIONS OF PFG OR BORROWER OR ANY OF THEIR DIRECTORS, OFFICERS, EMPLOYEES, AGENTS, ATTORNEYS OR ANY OTHER PERSONS AFFILIATED WITH PFG OR BORROWER, IN ALL OF THE FOREGOING CASES, WHETHER SOUNDING IN CONTRACT OR TORT OR OTHERWISE. WITHOUT INTENDING IN ANY WAY TO LIMIT THE PARTIES' AGREEMENT TO WAIVE THEIR RESPECTIVE RIGHT TO A TRIAL BY JURY** , if the above waiver of the right to a trial by jury is not enforceable, the parties hereto agree that any and all disputes or controversies of any nature between them arising at any time shall be decided by a reference to a private judge, mutually selected by the parties (or, if they cannot agree, by the Presiding Judge of the Santa Clara County, California Superior Court) appointed in accordance with Code of Civil Procedure Section 638 (or pursuant to comparable provisions of federal law if the dispute falls within the exclusive jurisdiction of the federal courts), sitting without a jury, in Santa Clara County, California; and the parties hereby submit to the jurisdiction of such court. The reference proceedings shall be conducted pursuant to and in accordance with the provisions of Code of Civil Procedure §§ 638 through 645.1, inclusive. The private judge shall have the power, among others, to grant provisional relief, including without limitation, entering temporary restraining orders, issuing preliminary and permanent injunctions and appointing receivers. All such proceedings shall be closed to the public and confidential and all records relating thereto shall be permanently sealed. If during the course of any dispute, PFG desires to seek provisional relief, but a judge has not been appointed at that point pursuant to the judicial reference procedures, then PFG may apply to the Santa Clara County, California Superior Court for such relief. The proceeding before the private judge shall be conducted in the same manner as it would be before a court under the rules of evidence applicable to judicial proceedings. The parties shall be entitled to discovery which shall be conducted in the same manner as it would be before a court under the rules of discovery applicable to judicial proceedings. The private judge shall oversee discovery and may enforce all discovery rules and order applicable to judicial proceedings in the same manner as a trial court judge. The parties agree that the selected or appointed private judge shall have the power to decide all issues in the action or proceeding, whether of fact or of law, and shall report a statement of decision thereon pursuant to the Code of Civil Procedure § 644(a). Nothing in this paragraph shall limit the right of PFG at any time to exercise self-help remedies, foreclose against Collateral, or obtain provisional remedies. The private judge shall also determine all issues relating to the applicability, interpretation, and enforceability of this paragraph.

[SIGNATURE PAGE FOLLOWS]

Borrower:

CANCER GENETICS, INC.

By /s/ Panna Sharma

Name: Panna Sharma

Title: Chief Executive Officer

By /s/ John A. Roberts

Name: John A. Roberts

Title: Chief Operating Officer

GENTRIS, LLC

By /s/ Panna Sharma

Name: Panna Sharma

Title: Chief Executive Officer

By /s/ John A. Roberts

Name: John A. Roberts

Title: Chief Operating Officer

PFG:

PARTNERS FOR GROWTH IV, L.P.

By /s/ Philip Lawson

Name: Philip Lawson

Title: Manager, Partners for Growth IV, LLC
Its General Partner

Partners For Growth

Schedule to
Loan and Security Agreement

Borrower: **Cancer Genetics, Inc., a Delaware corporation ("Parent")**
Address: **201 Route 17 N., 2nd Floor, Rutherford, NJ 07070**

Borrower: **Gentris, LLC, a Delaware limited liability company ("Gentris")**
Address: **33 Southcenter Court, Ste. 400, Morrisville, NC 27560**

Date: **March 22, 2017**

This Schedule forms an integral part of the Loan and Security Agreement between PARTNERS FOR GROWTH IV, L.P. and the above-referenced Borrower dated the Effective Date.

1. LOAN (Section 1.1):

The Loan: The Loan shall consist of a term loan in the original principal amount of $6,000,000, which amount shall be disbursed after deduction for the payoff amount under the Existing SVB Term Loan (as defined in Section 8(a)(1) of this Schedule), such net proceeds to be disbursed within upon the later to occur of one (1) Business Day following (i) the Effective Date and (ii) the Business Day following the Business Day on which the conditions set forth in Section 9 have been satisfied or, in PFG's sole discretion, waived or deferred.

Repayment: Borrower shall pay interest only on the outstanding principal balance of the Loan monthly in arrears on the first day of each month until the Maturity Date (or earlier acceleration of the Loan), whereupon the entire unpaid principal balance of the Loan plus all accrued and unpaid interest shall be paid.

Prepayment: The principal amount of the Loan may be prepaid in whole or in one or more parts at any time and from time to time, without penalty or fee. Repaid principal may not be re-borrowed.

2. INTEREST (Section 1.2):

The Loan shall bear interest at a per annum rate equal to 11.5%, fixed; provided, however, if Parent's consolidated Revenues and Adjusted EBITDA for its 2017 fiscal year, based upon amounts as disclosed in its first SEC Filing filed after December 31, 2017 (as adjusted for the definition of Adjusted EBITDA), meet or exceed ninety percent (90%) of its consolidated Revenues and Adjusted EBITDA, as previously agreed between Lender and Borrower for Parent's 2017 fiscal year, then, effective as of January 1, 2018, the interest rate shall be reduced to 11% per annum, fixed.

If Borrower qualifies for the foregoing interest rate reduction, as long as no Event of Default has occurred and is continuing, any interest accrued on and after January 1, 2018 and paid to PFG prior to the date of the SEC Filing reporting such qualification in excess of 11% per annum will be credited against interest payments next coming due after the date of said SEC filing in the order of maturity thereof.

3. FEES (Section 1.3):

Loan Fee: $120,000, payable promptly upon invoice by PFG on or following the Effective Date.

4. MATURITY DATE

(Section 5.1): March __, 2020.

5. FINANCIAL COVENANTS

(Section 4.1): Borrower shall comply with each of the following covenants. Compliance shall be determined on a consolidated basis (except with respect to Minimum Liquidity) (with numbers in parentheses denoting negative numbers):

Minimum Adjusted EBITDA: Tested calendar monthly on a trailing three-month ("T3M") basis, Borrower shall maintain Adjusted EBITDA of not less than the amounts set forth below for the corresponding T3M periods:

T3M Periods Ending	**Minimum Threshold**

12/31/16 through 5/31/17	$(3,000,000)
6/30/17 through 11/30/17	$(2,500,000)
12/31/17 through 2/28/18	$(1,750,000)
3/31/18 through 5/31/18	$(750,000)
6/30/2018 and each calendar month thereafter	$1

Minimum Revenues: Tested on a quarterly basis as of the end of each calendar quarter during the term of the Loan, Borrower's Revenues shall meet or exceed the thresholds set forth below for the corresponding periods:

Quarterly Periods	Minimum Thresholds
Q1-2017	$5,913,942
Q2-2017	$6,462,869
Q3-2017	$6,136,190
Q4-2017	$7,431,614

Future Periods: With respect to the period ending March 31, 2018 and each period thereafter, the levels of minimum Revenue shall be set by PFG in consultation with and generally consistent with SVB. With respect thereto:

(i) Borrower's failure to either (1) agree in writing (which agreement shall be set forth in a written amendment to this Agreement) on or before February 28, 2018, to any such covenant levels with respect to Borrower's fiscal year ending December 31, 2018, or (2) notwithstanding Section 7(g) of this Schedule, deliver to PFG, on or before the earlier to occur of (i) January 31, 2018 and (ii) three (3) Business Days after approval by the Board, Borrower's budgets, sales projections, operating plans and other financial information of Borrower that PFG reasonably deems relevant, including, without limitation, Borrower's Board-approved operating budgets, projections and plans, with respect to Borrower's fiscal year ending December 31, 2018, shall result in an immediate Event of Default for which there shall be no grace or cure period; and

(ii) Borrower's failure to either (1) agree in writing (which agreement shall be set forth in a written amendment to this Agreement) on or before February 28, 2019, to any such covenant levels with respect to Borrower's fiscal year ending December 31, 2019, or (2) notwithstanding Section 7(g) of this Agreement, deliver to PFG, on or before the earlier to occur of (i) January 31, 2019 or (ii) three (3) Business Days after approval by

the Board, Borrower's budgets, sales projections, operating plans and other financial information of Borrower that PFG reasonably deems relevant, including, without limitation, Borrower's Board-approved operating budgets, projections and plans, with respect to Borrower's fiscal year ending December 31, 2019, shall result in an immediate Event of Default for which there shall be no grace or cure period.

Minimum Liquidity: Tested monthly with respect to Borrower only, and not on a consolidated basis with any Non-Borrower Subsidiaries, Borrower shall at all times maintain Minimum Liquidity of at least $3,500,000.

Definitions: For purposes of the foregoing financial covenants, the following terms shall have the following meanings:

"Adjusted EBITDA" means, calculated on a consolidated basis with respect to Parent and its Subsidiaries, (a) Net Income, plus (b) to the extent deducted in the calculation of Net Income, (i) Interest Expense, (ii) depreciation and amortization expense, (iii) income tax expense, (iv) and non-cash stock compensation expense, and (v) restructuring and severance costs not exceeding $200,000 in the aggregate in any fiscal year of Parent, exclusive of not more than $190,000 to be booked in the first calendar quarter of Parent's 2017 fiscal year, minus (c) unfinanced capital expenditures, all as determined in accordance with GAAP.

"Minimum Liquidity" means the sum of Cash and Cash Equivalents in Collateral Accounts with the Senior Lender, plus Availability. For purposes hereof, "Availability" means the unused amount that may be drawn by Borrower on any day under Parent's revolving line of credit with the Senior Lender (which, for the avoidance of doubt, shall be net of then outstanding principal borrowings under such line of credit).

6. REPORTING.
(Section 4.4):

As long as any Obligations remain outstanding, Borrower shall provide PFG with the following, provided, however, PFG shall retain the right to request that Borrower not provide (in any instance or generally) any particular Report(s) so that PFG is not then privy to material non-public information concerning Borrower):

(a) Monthly accounts payable, accounts receivable and deferred Revenue schedules, aged by invoice date, and outstanding or held check registers, if any, within 30 days after the end of each month.

(b) Monthly unaudited, management-prepared consolidated and consolidating Financial Statements, as soon as available, and in any event within 30 days after the end of each month.

(c) Monthly Compliance Certificates within 30 days after the end of each month, signed by a Responsible Officer of Parent, certifying that as of the end of such month Borrower was in full compliance with all of the terms and conditions of this Agreement and setting forth calculations showing compliance with the financial covenants set forth in this Schedule, together with such other information as PFG shall reasonably request.

(d) Borrower's SEC Filings, within five (5) days of such filing. SEC Filings may be delivered electronically and if so delivered, shall be deemed to have been delivered on the date on which Borrower posts such documents, or provides a link thereto, on Borrower's website on the internet at Borrower's website address; provided, however, Borrower shall promptly notify Lender in writing (which may be by electronic mail) of the posting of any such documents

(e) Without limiting Borrower's obligation to provide notice to PFG of certain events or circumstances as specified in this Agreement, quarterly updates to the Representations within fifteen (15) days after the end of each calendar quarter; provided however, that changes to information disclosed in Sections 1, 2(a) and (b), 3(a), 11(a) and (c) and 17 shall be promptly notified to PFG and reflected in the succeeding update to the Representations.

(f) Within five (5) Business Days of delivery, copies of all statements, reports and notices made available to Borrower's security holders or to any holders of Subordinated Debt.

(e) within sixty (60) days after the last day of each fiscal year of Borrower, and contemporaneously with any updates or amendments thereto, (i) annual operating budgets (including income statements, balance sheets and cash flow statements, by month), and (ii) annual financial projections (on a quarterly basis), in each case, as approved by the Board, together with any related business forecasts used in the preparation of such annual financial projections.

(g) Upon request, copies of all reports and statements provided by Borrower to the Senior Lender.

(h) Such other reports and information concerning the operations, business affairs and financial condition of Parent and any

Subsidiary, or compliance with the terms of this Agreement, as PFG may reasonably request.

7. BORROWER INFORMATION:

Borrower represents and warrants that the information set forth in the Representations and Warranties of Borrower dated March 3, 2017, previously submitted to PFG (the "Representations") is true and correct in all respects as to the information set forth in Sections 1, 2(a) and (b), 3(a), 11(a) and (c) and 17, and in all material respects as to the other information set forth in the Representations, in each case as of the Effective Date.

8. ADDITIONAL PROVISIONS

(a) **Senior Lender.**

(1) Senior Lender. As used herein, "Senior Lender" means Silicon Valley Bank and any assignee thereof (or any financial institution which refinances the Indebtedness due to Silicon Valley Bank upon the same or more favorable terms and conditions applicable to such Indebtedness), provided that any such assignment shall require the prior consent of PFG, which consent will not unreasonably be withheld if the terms of the subordination agreement between PFG and such assignee (including Senior Debt Limit) are identical in all (other than identification of the parties) respects to the terms of the Senior Lender Subordination; and "Senior Loan Documents" means all present and future documents, instruments and agreements entered into between Borrower and Senior Lender or by third parties relating to Borrower and Senior Lender.

(2) Senior Debt Limit. Borrower shall not permit the total Indebtedness of Borrower to Senior Lender, other than Non-Overdue Senior Monetary Obligations, to exceed $6,000,000 plus (i) interest and all collection costs (including attorneys' fees), (ii) all interest accruing after any bankruptcy, reorganization or similar proceeding, (iii) the amount of all Protective Advances, overdrafts of up to $200,000 in the aggregate at any given time, and (iv) certain products and/or credit services facilities,

including, without limitation, any letters of credit, guidance facilities, cash management services (including, without limitation, merchant services, direct deposit of payroll, business credit cards, and check cashing services), interest rate swap arrangements, and foreign exchange services up to $500,000 in the aggregate at any given time (collectively, the "Senior Debt Limit"). For the avoidance of doubt, the Senior Debt shall not include any obligations to the Senior Lender under the term loan facility being terminated by Borrower and the Senior Lender in the principal amount of $4,166,666.63, plus a final payment of $180,000, plus approximately $14,149.30 in interest, which facility is being paid off directly by PFG from the Loan proceeds (the "Existing SVB Term Loan").

(3) Senior Loan Documents. Borrower represents and warrants that it has provided PFG with true and complete copies of all existing Senior Loan Documents, and Borrower covenants that it will, from time to time, provide PFG with true and complete copies of any future Senior Loan Documents, including without limitation any amendments to any existing Senior Loan Documents.

(b) **Collateral Accounts.** Concurrently, Borrower shall cause the banks and other institutions where its Collateral Accounts are maintained to enter into Control Agreements with PFG, in form and substance legally sufficient and otherwise satisfactory to PFG in its good faith business judgment and sufficient to perfect PFG's security interest in said Collateral Accounts, subject to the Lien of the Senior Lender. Said Control Agreements shall permit PFG, upon the occurrence and during the continuance of an Event of Default, to exercise exclusive control over said Collateral Accounts and proceeds thereof (subject to the rights of the Senior Lender). Notwithstanding the foregoing, if Borrower maintains any Collateral Accounts on the Effective Date other than with the Senior Lender, so long as no Default or Event occurs and is continuing, PFG shall not require a Control Agreement if such Collateral Accounts are closed and the proceeds thereof transferred to Borrower's Collateral Accounts with the Senior Lender within sixty (60) days from the Effective Date.

(c) **Subordination of Inside Debt**. All present and future indebtedness of Borrower to its officers, directors and shareholders ("Inside Debt") shall, at all times, be subordinated

to the Lien of PFG in respect of and prior payment of the Obligations. Borrower represents and warrants that there is no Inside Debt presently outstanding, except as set forth in Exhibit A. Prior to incurring any additional Inside Debt, Borrower shall cause the Person to whom such Inside Debt will be owed to execute and deliver to PFG a subordination agreement in PFG's customary form.

9. CONDITIONS

In addition to any other conditions to the Loan set forth in this Agreement, PFG shall have no obligation to make the Loan (A) if facts or circumstances have arisen or been discovered that would, as determined by PFG in its sole discretion, negatively affect the collectability of the Obligations, PFG's Liens in Borrower's Collateral or the value of such Collateral, thereof, and (B) unless and until PFG shall have received from Borrower, in form and substance satisfactory to PFG, such documents, and completion of such other matters, as PFG may reasonably deem necessary or appropriate, including, without limitation:

(i) duly executed original signatures of Borrower to the Loan Documents to which Borrower is a party, including without limitation, this Agreement, the Intellectual Property Security Agreement and related Collateral Agreements and Notices, the Solvency Certificate, the PFG Warrant, landlord consents and bailee waivers, Security Instruments requiring Borrower's signature, and subordination agreements among PFG, Borrower and holders of Subordinated Debt;

(ii) the Constitutional Documents of each Borrower and good standing certificates of each Borrower certified by the Secretary of State or other Governmental Body of the jurisdiction of formation of such Borrower, in each case dated as of a date no earlier than thirty (30) days prior to the date hereof;

(iii) a Certificate of Incumbency and a Secretary's (or other appropriate officer's) Certificate of each Borrower certifying the Constitutional Documents of such Borrower and resolutions of the Board of such Borrower authorizing the execution, delivery and performance of the Loan Documents to which such Borrower is a party, including in the case of Parent, the PFG Warrant;

(iv) Control Agreements as required by Section 8(b) of this Schedule, duly executed by Borrower and each relevant depositary institution in favor of PFG, including the Senior Lender;

(v) results of Lien, judgment and bankruptcy searches as PFG shall request, accompanied by written evidence (including any UCC termination statements) that the Liens indicated in any such search results either constitute Permitted Liens or have been (or, in connection with the Loan, will be) terminated or released;

(vi) the Representations, duly executed by Borrower;

(vii) within sixty (60) days after the Effective Date, landlord consents executed in favor of PFG by Borrower's principal office lessor in respect of its premises in Rutherford, New Jersey and Morrisville, NC and, if required by PFG, each other premises where Collateral with a fair value in excess of $10,000 is maintained, and warehouseman's / bailee waivers in respect of third party premises where Collateral with a fair value in excess of $25,000 is stored or housed, including Borrower's facilities at 1640 Marengo Street, 4th Floor, Los Angeles, CA 90033;

(viii) duly executed warrants in favor of PFG and its designees to purchase Parent's common stock, in agreed form (the "PFG Warrant");

(ix) the insurance policies and/or endorsements required pursuant to Section 5.2;

(x) payment of the Loan Fee specified in Section 3 of this Schedule and Lender Expenses incurred in connection with the Loan;

(xi) any third party consents required in order for Borrower to enter into and perform the Loan Documents;

(xii) the Senior Lender Subordination Agreement in agreed form between PFG and the Senior Lender, executed by Senior Lender;

(xiii) such Security Instruments as PFG shall require, duly executed where required;

(xiv) an opinion of counsel to Borrower in form and substance reasonably satisfactory to PFG and addressing authority, execution, issuance and enforceability of the PFG Warrant and the stock issuable thereunder and the other matters addressed in such opinion;

(xv) delivery of copies of the final execution copies of the Senior Debt Documents;

(xvi) evidence satisfactory to PFG on the date the Loan is funded that the Existing SVB Term Loan has been terminated;

(xvii) as a condition subsequent, within three (3) Business Days from the Effective Date, the closing of the amendment and restatement of the Senior Lender's revolving line of credit and delivery of copies of the fully-executed Senior Debt Documents; and

(xvi) to the extent that the conditions to this Agreement have not been completed as of the Effective Date, a post-closing obligations letter in PFG's customary form by which PFG waives or defers performance of such conditions as PFG is willing to defer in its sole business discretion.

[Signature Page Follows]

Borrower:

CANCER GENETICS, INC.

By /s/ Panna Sharma

Name: Panna Sharma

Title: Chief Executive Officer

By /s/ John A. Roberts

By: John A. Roberts

Title: Chief Operating Officer

GENTRIS, LLC

By /s/ Panna Sharma

Name: Panna Sharma

Title: Chief Executive Officer

By /s/ John A. Roberts

Name: John A. Roberts

Title: Chief Operating Officer

PFG:

PARTNERS FOR GROWTH IV, L.P.

By /s/ Philip Lawson

Name: Philip Lawson

Title: Manager, Partners for Growth IV, LLC
Its General Partner

Exhibit A to Loan and Security Agreement

Section 3.4(d) – Fixtures, Etc.

None.

Section 3.10 – Litigation:

Borrower is party to a lawsuit entitled Vantari Medical LLC v. Cancer Generics, Inc. in the court of Common Pleas in Greenville County, South Carolina with respect to a claim of breach of contract or unjust enrichment. The claim amount is $750,000. Borrower has accrued liabilities for $500,000 on its balance sheet relating to this claim.

Borrower is party to a lawsuit in the United States District Court for the District of New Jersey titled Andrea Natasha Jackson v. Cancer Genetics, Inc. with respect to a claim of employment discrimination. The claim amount is undetermined as of the Closing Date.

Section 7—"Permitted Indebtedness"—Other Existing Permitted Indebtedness:

Section 7—"Permitted Investments"—Other Existing Permitted Investments:

Schedule Section 8 - "Inside Debt":

Exhibit B to Loan and Security Agreement – Compliance Certificate

WARRANT

THIS WARRANT ("WARRANT") TO PURCHASE SHARES IN THE CAPITAL OF CANCER GENETICS, INC., A DELAWARE CORPORATION (THE “COMPANY”) IS ISSUED ON THE ISSUE DATE PURSUANT TO THE TERMS OF THAT CERTAIN LOAN AND SECURITY AGREEMENT BETWEEN THE COMPANY AND PARTNERS FOR GROWTH IV, L.P. (“PFG” AND SUCH AGREEMENT, THE “LOAN AGREEMENT”). THIS WARRANT AND THE UNDERLYING SHARES ARE SOLD IN A PRIVATE TRANSACTION, WITHOUT REGISTRATION UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND REGULATIONS PROMULGATED THEREUNDER (THE "SECURITIES ACT") OR THE SECURITIES LAWS OF ANY STATE, AND MAY BE OFFERED OR SOLD ONLY IF REGISTERED UNDER THE SECURITIES ACT AND SUCH LAWS OR IF AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT AND SUCH LAWS IS AVAILABLE.

Company:	Cancer Genetics, Inc., a Delaware corporation (NASDAQ: CGIX
Warrant Stock:	Common Stock
Number of Shares:	Up to 265,957 shares, subject to adjustment
Exchange Price:	$2.82 per Share, subject to adjustment
Issue Date:	March 22, 2017
Expiration Date:	March 22, 2024

The term "Holder" shall initially refer to Partners for Growth IV, L.P., a Delaware limited partnership, which is the initial holder of this Warrant and shall further refer to any subsequent permitted holder of this Warrant from time to time.

The Company does hereby certify and agree that in consideration of Holder’s payment of $5,029 for this Warrant on the Issue Date (such dollar amount, exclusive of the Exchange Price payable or creditable upon Exercise or Exchange of this Warrant), Holder, or its permitted successors and assigns, hereby is entitled, subject to Section 1.8 hereof, to Exchange or Exercise this Warrant in the Company for up to Two Hundred Sixty-Five Thousand Nine Hundred Fifty-Seven (265,957) shares of the Company’s Common Stock, par value $.0001 per share (the “Warrant Stock”). This Warrant is subject to adjustment as set forth in this Warrant. Capitalized terms used but not defined in this Warrant have their meanings as set forth in the Loan Agreement defined in the heading between the Company and Partners for Growth IV, L.P. (“ PFG”), whether or not the Loan Agreement is then in effect. When the term “convert” or “conversion” in relation to the Warrant is used herein, it includes an Exchange and an Exercise, each as defined in Section 1.3(a), below, as applicable.

Section 1. Term, Price and Exchange of Warrant.

1.1 Term of Warrant. This Warrant shall be convertible for a period of seven (7) years after the Issue Date (hereinafter referred to as the "Expiration Date").

1.2 Exchange Price. The price per Share at which the shares of Warrant Stock are issuable upon conversion of this Warrant shall be $2.82 per share of Warrant Stock (the "Exchange Price").

1.3 Conversion of Warrant.

(a) This Warrant may be exercised, in whole or in part, upon surrender of this Warrant to the Company, together with the Election to Exchange or Exercise attached hereto as Exhibit A (the "Election") duly completed and executed with "Exercise" selected as the mode of conversion, and upon payment to the Company of the Exchange Price for the number of shares of Warrant Stock in respect of which this Warrant is then being exercised (an "Exercise"). In whole or in part in lieu of an Exercise, Holder may convert this Warrant on a cashless basis by so indicating in the Election and proceeding in accordance with the remainder of this Section 1.3 (an "Exchange"). In each above case, Holder shall surrender this Warrant to the Company at its then principal offices, together with the Election duly completed and executed.

(b) Upon an Exchange, the Holder shall receive shares of Warrant Stock such that, without the payment of any funds, the Holder shall surrender this Warrant in exchange for the number of shares of Warrant Stock equal to "X" (as defined below), computed using the following formula:

$$X = \frac{Y * (A-B)}{A}$$

Where

X = the number of shares of Warrant Stock to be issued to Holder
Y = the number of shares of Warrant Stock to be converted under this Warrant
A = the Fair Market Value of one share of Warrant Stock
B = the Exchange Price (as adjusted to the date of such calculations)
* = multiplied by

(c) For purposes of calculating Fair Market Value for purposes of Exchanging this Warrant, the "Fair Market Value" of one share of Warrant Stock shall be (i) if the Company's securities become listed on a national or international stock exchange, the average closing sale price reported on such exchange for such listed securities during the 90-trading day period immediately prior to the date Holder delivers its Election to the

Company, or (ii) if the Company's securities are traded over-the-counter, the average of bid and ask price for such securities over the 90-trading day period immediately prior to the day Holder delivers its Election to the Company, in each case of (i) and (ii), above, if the shares of Warrant Stock are convertible into such listed or over-the-counter traded securities other than on a one-to-one basis, multiplied by the ratio at which one share of Warrant Stock converts into such other security. If the Company's securities are not listed or traded as contemplated in clauses (i) or (ii), above, the Fair Market Value of a share of Warrant Stock shall be the price per share that the Company could obtain from a willing buyer of shares of Warrant Stock sold by the Company from its authorized but unissued shares, initially as the Board of Directors of the Company ("Board") shall determine in its reasonable good faith judgment, subject to Holder's valuation rights below, to the extent applicable, but in no event less than the price to which a holder of Warrant Stock would be entitled based on an enterprise valuation of the Company (including its Subsidiaries if part of a Group) as a going concern and the application of the rights, preferences and privileges of the Company's outstanding securities as set forth in the Company's Constitutional Documents without discount for minority, control or lack of marketability. If at any time during the term of this Warrant the Company's stock is no longer traded on a Stock Market or, if it is so traded but the Company is not current in the filing of its SEC Reports, and the Board relies on an appraisal (including a "409A" valuation) to determine the Fair Market Value of the Warrant Stock, such determined Fair Market Value from such valuation may not assume the automatic conversion of all convertible securities in deriving such Fair Market Value but, instead, shall be based on enterprise value and application of the rights, preferences and privileges of the Company's outstanding securities as set forth in the Company's Constitutional Documents as if the Company (or Group) were being sold in an Acquisition for cash to determine what dollar value each class of security would receive upon such Acquisition. If the Warrant is to be converted in connection with an Acquisition (in fact), the Fair Market Value of a share of Warrant Stock shall be based on the Acquisition consideration specified or implied in such Acquisition and shall be the greater of (A) the value attributable to the Warrant Stock and (B) the value attributable to the Company securities into which the shares of Warrant Stock is (or may be) convertible (but subject to Holder's conversion directly into such other Company securities). If at any time during the term of this Warrant the Company's stock is no longer traded on a Stock Market or, if it is so traded but the Company is not current in the filing of its SEC Reports and Holder disagrees the Board's determination of Fair Market Value, Holder may engage an independent appraiser to determine fair market value of the Warrant Stock the foregoing basis at shared expense between the Company and Holder. If the fair market value difference between the Board's determination and the determination by the Holder's appraiser is less than 30%, then the average between the two determinations shall be deemed to be the fair market value. If the difference is 30% or more, then the parties shall agree a second appraiser, with each party bearing half of the expense of such second appraiser, and the determination of such appraiser shall be deemed to be the fair market value.

(d) In the event that Holder converts this Warrant in connection with a transaction in which shares of the same class and series as the Warrant Stock are converted into another security, Holder may effect a conversion directly into such other security.

(e) Subject to Section 2 hereof, upon delivery of the duly completed and executed Election, the Company shall issue and deliver within three (3) business days to Holder or such other person as Holder may designate in writing a certificate or certificates or other legal evidence of Holder's ownership of the number of shares of Warrant Stock so acquired upon the conversion of this Warrant. Such certificate(s) or other legal evidence shall be deemed to have been issued and any person so designated to be named therein shall be deemed to have become a stockholder of the Company and a holder of record of such shares of Warrant Stock as of the date the Election is delivered to the Company. If this Warrant is converted in part, a new warrant substantially identical to this Warrant for the number of Shares not converted shall be promptly executed and delivered to Holder by the Company.

1.4 Fractional Interests. The Company shall not be required to issue fractions of shares of Warrant Stock upon the conversion of this Warrant. If any fraction of a share of Warrant Stock would be issuable upon the conversion of this Warrant (or any portion thereof), the Company shall purchase such fraction for an amount in cash equal to the fair market value of a share of Warrant Stock as determined by the Board in its reasonable judgment.

1.5 Certain Definitions. For purposes of this Warrant:

"Acquisition" means, in any single transaction or series of related transactions: (i) any sale or other disposition (including exclusive license) of all or substantially all of the assets of the Company in whatever form and however consummated, (ii) any reorganization, consolidation, merger or acquisition of the Company in which the Company is not the survivor, or (iii) any liquidation or deemed liquidation under the Company's Constitutional Documents..

An "Affiliate" of, or person "affiliated" with, a specified Person, is a Person that directly, or indirectly through one or more intermediaries, beneficially owns or is beneficially owned, controls or is controlled by, or is under common control with, the Person specified.

"Constitutional Documents" means the Company's Certificate of Incorporation (as amended and restated, as applicable), Bylaws and agreements between or among the Company and holders of any class or series of its stock.

"Control" (including the terms "controlling", "controlled by" and "under common control with") means the possession, direct or indirect through one or more Affiliates, of the power to direct or cause the direction of the management and policies of a person, whether through the ownership or voting of voting securities, by contract, or otherwise.

"NASDAQ" means the Nasdaq Stock Market.

"Person" or "person" means any individual, sole proprietorship, partnership, joint venture, trust, unincorporated organization, association, corporation, government, or any agency or political division thereof, or any other entity of any kind.

"SEC" means the United States Securities and Exchange Commission.

"SEC Reporting" means the reports required by the SEC to be filed and made available to the public, including Form 10Q, 10K and 8K, as such reporting requirements may be amended and supplemented time to time.

"Stock Market**"** shall mean the principal securities exchange on which a security is listed or admitted to trading, including, without limitation, the New York Stock Exchange, the NYSE-MKT, The Nasdaq Global Market, The Nasdaq Global Select Market, The Nasdaq Capital Market, the OTC Bulletin Board or any tier of the OTC Markets.

. 1.6 Automatic Conversion upon Expiration. Upon the Expiration Date, if the Fair Market Value of a share of Warrant Stock exceeds the Exchange Price, this Warrant shall automatically be deemed on and as of such date to be Exchanged pursuant to Section 1.3 as to all shares of Warrant Stock (or such other securities) for which this Warrant has become convertible and for which it shall not previously have been converted for Warrant Stock (or if not then outstanding, into such other class and series of securities into which the Warrant Stock is then convertible), and the Company shall promptly deliver a certificate or other legal evidence of ownership of the shares of Warrant Stock (or such other securities) issued upon such Exchange to Holder.

1.7 Treatment of Warrant Upon Acquisition of Company. Without prejudice to PFG's right to convert this Warrant at any time at its option, upon the closing of any Acquisition, the surviving entity shall, as a condition to the Acquisition, either (i) assume the obligations under this Warrant, and this Warrant shall then be convertible into the same securities as would be payable for the shares of Warrant Stock issuable upon conversion of the unconverted portion of this Warrant as if such shares of Warrant Stock were outstanding on the record date for the Acquisition (and the Exchange Price and/or number of shares of Warrant Stock shall be adjusted accordingly); or (ii) the surviving entity in such Acquisition shall, upon initial closing of such Acquisition purchase this Warrant at its "Fair Value" (the "Purchase Price"). For purposes hereof, "Fair Value" means that value determined by the parties using a Black-Scholes Option-Pricing Model (the "Black-Scholes Calculation") with the following assumptions: (A) a risk-free interest rate equal to the risk-free interest rate at the time of the closing of the Acquisition (or as close thereto as practicable), (B) a contractual life of the Warrant equal to the remaining term of this Warrant as of the date of the announcement of the Acquisition, (C) an annual dividend yield equal to dividends payable or declared on the underlying shares of Warrant Stock (including securities into which the shares of Warrant Stock may be convertible) during the term of this Warrant (calculated on an annual basis), and (D) a volatility factor of the expected market price of the Company's Shares comprised of: (1) if the Company is publicly traded on a national securities exchange, its volatility over the one year period ending on the day prior to the announcement of the Acquisition, (2) if the Shares are traded over-the-counter, its volatility over the one year period ending on the day prior to the announcement of the Acquisition, or (3) if the Company is a non-public company, the volatility, over the one year period prior to the Acquisition, of an average of publicly-traded companies in the same

or similar industry to the Company with such companies having similar revenues. The Purchase Price determined in accordance with the above shall be paid upon the initial closing of the Acquisition and shall not be subject to any post-Acquisition closing contingencies or adjustments; provided, however, the parties may take such post-Acquisition closing contingencies or adjustments into account in determining the Purchase Price, and if the parties take any post-Acquisition closing contingencies or adjustments into account, then upon the partial or complete removal of those post-Acquisition closing contingencies or adjustments, a new Black-Scholes Calculation would be made using all of the same inputs except for the value of the Company's Shares (as determined under subclause (D)), and any increase in Fair Value (and, correspondingly, Purchase Price), including, without limitation, as a result of any earn-out or escrowed consideration, would be paid in full to Holder immediately after those post-Acquisition closing contingencies or adjustments can be determined or achieved.

1.8 Reduction in Number of Shares. If the Company meets or exceeds, for calendar 2017, based on amounts as disclosed in the Company's first SEC Reporting made after December 31, 2017 (as adjusted for the definition of Adjusted EBITDA), ninety percent (90%) of its consolidated Revenues and Adjusted EBITDA as previously agreed between Lender and the Company for its 2017 fiscal year, then the Number of Shares subject to this Warrant as set forth on page 1 hereto shall be reduced by twenty percent (20%) to 212,766 shares. Except if convertible in connection with an Acquisition, until the Company's satisfaction of such performance conditions is determinable, Holder may convert this Warrant for no more than eighty percent (80%) of the stated Number of Shares. "Revenues" and "Adjusted EBITDA" have their meanings as previously agreed between Holder and the Company.

Section 2. Exchange and Transfer of Warrant.

(a) This Warrant may be transferred, in whole or in part, without restriction, subject only to (i) Holder's compliance with applicable securities laws (which, in the case of Affiliates, shall be deemed satisfied by Holder (and transferee) certification of Affiliate status), and (ii) the transferee holder of the new Warrant assuming the obligations of Holder set forth in this Warrant. A transfer may be registered with the Company by submission to it of the annexed Assignment Form attached hereto as Exhibit B duly completed and executed. After the Company's registration of a transfer of this Warrant, the Company will issue and deliver to the transferee a new warrant (representing the portion of this Warrant so transferred) upon the same terms and conditions as this Warrant and in substantially identical form, which the Company will register in the new holder's name. In the event of registration of a partial transfer of this Warrant, the Company shall concurrently issue and deliver to the transferring holder a new warrant that entitles the transferring holder to the balance of this Warrant not so transferred and that otherwise is upon the same terms and conditions as this Warrant. Upon the delivery of this Warrant for transfer, the transferee holder shall for all purposes become the holder of the new warrant issued for the portion of this Warrant so transferred, irrespective of the date of actual delivery of the new warrant representing the portion of this Warrant so transferred.

(b) In the event of the loss, theft or destruction of this Warrant, the Company shall execute and deliver an identical new warrant to Holder in substitution therefor upon the Company's receipt of (i) evidence reasonably satisfactory to the Company of such event, and (ii) if requested by the Company, an indemnity agreement in reasonable and customary form.

(c) The Company shall pay its own and all Holder's reasonable costs and expenses incurred in connection with the conversion, transfer or replacement of this Warrant, including, without limitation, securities compliance, the costs of preparation, execution and delivery of a new warrant and of certificates or other legal evidence of all Warrant Stock.

Section 3. Certain Covenants.

(a) The Company shall ensure that any approval of its stockholders required for issuance of this Warrant and of the shares of Warrant Stock issuable upon conversion hereof (which shall, for the avoidance of doubt, include any securities into which shares of Warrant Stock are or become convertible) remains in full force and effect until the earlier of conversion or the Expiration Date.

(b) The Company will not, by amendment of its Constitutional Documents or through reorganization, consolidation, merger, amalgamation, sale of assets or otherwise, avoid or seek to avoid the observance or performance of any of the terms of this Warrant. Without limiting the foregoing, the Company will from time to time take all such action as may be necessary or appropriate in order that the Company may validly and legally issue shares of Warrant Stock upon the conversion of this Warrant.

(c) If at any time during the term of this Warrant the Company's stock is no longer traded on a Stock Market or, if it is so traded but the Company is not current in the filing of its SEC Reports and for so long as Holder or any of its Affiliates holds this Warrant and/or the Warrant Stock, the Company shall deliver to Holder (i) such reports as it provides to any holders of securities of the same class and series as the Warrant Stock, as and when delivered to such holders, (ii) copies of any and all valuations performed of the Company or the value of its stock (including for purposes of Section 409A of the Internal Revenue Code), as and when such valuations are made available to the Company, and (iii) quarterly and annual financial statements and such other information as such Holder may reasonably request and that the Company may lawfully provide at such time under applicable securities laws.

(d) The Company shall not treat the Warrant or the shares of Warrant Stock as being granted or issued as property transferred in connection with the performance of services or otherwise as compensation for services rendered.

(e) The Company shall not characterize the Warrant as an ownership interest in the Company or Holder as a stockholder of the Company until such time as Holder converts the Warrant for shares of Warrant Stock.

Section 4. Adjustments to Number of Shares of Warrant Stock, Etc.

4.1 Adjustments. In order to prevent dilution of the rights granted hereunder, the Number of Shares and Exchange Price shall be subject to adjustment from time to time in accordance with this Section 4. Upon each adjustment of the Exchange Price pursuant to this Section 4, Holder shall thereafter be entitled to acquire upon conversion, at the Exchange Price resulting from such adjustment, the number of shares of Warrant Stock obtainable by multiplying the Exchange Price in effect immediately prior to such adjustment by the number of shares of Warrant Stock acquirable immediately prior to such adjustment and dividing the product thereof by the new Exchange Price resulting from such adjustment.

4.2 Subdivisions, Combinations and Stock Dividends . If the Company shall at any time subdivide by split-up or otherwise, the class and series of Company securities into which the Warrant could then be converted into a greater number of shares, or issue additional securities as a dividend, bonus issue or otherwise with respect to such securities into which the Warrant could be converted, then the Exchange Price in effect immediately prior to such subdivision or share dividend or bonus issue shall be proportionately reduced and the number of shares acquirable upon exchange hereunder shall be proportionately increased. Conversely, if the class and series of Company securities into which the Warrant could then be converted are combined into a smaller number of shares, the Exchange Price in effect immediately prior to such combination shall be proportionately increased.

4.3 Reclassification, Exchange, Substitutions, Etc. Upon any reclassification, exchange, substitution, or other event that results in a change of the number and/or class of the securities issuable upon exchange or exercise of this Warrant, Holder shall be entitled to receive, upon conversion of this Warrant, the number and kind of securities and property that Holder would have received for the Warrant Stock if this Warrant had been converted immediately before such reclassification, exchange, substitution, or other event. Such an event shall include any automatic conversion of the outstanding or issuable securities of the Company of the same class or series as the Warrant Stock to Common Stock pursuant to the Company's Constitutional Documents upon the closing of a public offering of the Company's Common Stock. The Company or its successor shall promptly issue to Holder an amendment to this Warrant setting forth the number and kind of such new securities or other property issuable upon exchange or exercise of this Warrant as a result of such reclassification, exchange, substitution or other event that results in a change of the number and/or class of securities issuable upon exchange or exercise of this Warrant. The amendment to this Warrant shall provide for adjustments (as determined in good faith by the Company's Board of Directors) which shall be as nearly equivalent as may be practicable to the adjustments provided for in this Article 4 including, without limitation, adjustments to the Warrant Price and to the number of securities or property issuable upon exchange of the new Warrant. The provisions of Sections 4.2 and 4.3 shall similarly apply to successive

subdivisions, combinations, Share dividends, distributions, reclassifications, exchanges, substitutions, and dilutive events.

4.4 Notices of Record Date, Etc . In the event that the Company shall:

(1) declare or propose to declare any dividend upon Company securities, whether payable in cash, property, shares or other securities and whether or not a regular cash dividend, or

(2) offer for sale any additional shares of any class or series of the Company's stock or securities exchangeable for or convertible into such stock in any transaction that would give rise (regardless of waivers thereof) to pre-emptive rights of any class or series of shareholders, or

(3) effect or approve any reclassification, exchange, substitution or recapitalization of the capital shares of the Company, including any subdivision or combination of its outstanding stock, or consolidation or merger of the Company with, or sale of all or substantially all of its assets to, another corporation, or to liquidate, dissolve or wind up (including an assignment for the benefit of creditors) or a reorganization of the Company, or

(4) fail to be current and timely in its SEC Reporting, or suffer a delisting of its securities or other event that would substantially eliminate a trading market in the Company's common stock that exists on the Issue Date, or

(5) offer holders of registration rights the opportunity to participate in any registration of the Company's securities or any public offering of the Company's securities,

then, in connection with such event, the Company shall give to Holder:

(i) at least ten (10) days prior written notice of the date on which the books of the Company shall close or a record shall be taken for such a distribution or offer in respect of the matters referred to in (1) or (2) above, or for determining rights to vote in respect of the matters referred to in (3) above;

(ii) in the case of the matters referred to (4), above, written notice promptly following the filing of any SEC Reporting required in connection with such events and if the Company is not then subject to SEC Reporting or is not current in its SEC Reporting, then notice on the day that such SEC Reporting would otherwise have been due; and

(iii) in the case of the matters referred to in (3) and (5), above, the greater of (A) ten (10) days prior written notice of the date when the same is anticipated to be consummated and (B) the date that notice of the same is or is required to be given to any stockholder.

Such notice in accordance with the foregoing clause (1) shall also specify, in the case of any such distribution, the date on which the holders of Company securities shall be entitled thereto and the terms of such distribution. Each such written notice shall be given in accordance with Section 9.

4.5 Equitable Adjustments by Board. If any event occurs that does not fall within the generic corporate transaction terms used in this Section 4 (such as merger or reorganization) but is within the rationale of adjustment provisions generally in warrants as maintaining the economic value of the warrant and underlying equity shares relative to other holders of equity, then the Board shall make an adjustment in the application of such provisions so that the effect of such event on the rights and economics of Holder are not disadvantaged relative to the rights and economics of equity holders generally.

4.6 Officer's Statement as to Adjustments. Whenever the Number of Shares subject to this Warrant is required to be or is adjusted as provided in Section 4, the Company shall forthwith file at the office designated for the conversion of this Warrant a statement, signed by the chief financial officer of the Company, showing in reasonable detail the facts requiring such adjustment and the number of issuable shares of Warrant Stock that will be effective after such adjustment. If such notice relates to an adjustment resulting from an event referred to in Section 4.3, such notice shall be included as part of the notice required to be mailed or published under the provisions of Section 4.4.

4.7 Issue of Securities other than Warrant Stock. In the event that at any time, as a result of any adjustment made pursuant to Section 4, Holder thereafter shall become entitled to receive any securities of the Company, other than Warrant Stock, thereafter the number of such other securities so receivable upon conversion of this Warrant shall be subject to adjustment from time to time in a manner and on terms as nearly equivalent as practicable to the provisions with respect to the Warrant Stock contained in Section 4.

Section 5. Rights of the Warrant Holder.

This Warrant shall entitle Holder, upon Conversion, to the benefit of all rights as are applicable to any stockholder of the Company holding shares that are the same class and series as the Warrant Stock.

Section 6. Representations, Warranties and Covenants of the Company. The Company represents and warrants to, and covenants with, Holder that:

6.1 Corporate Power; Authorization. The Company has all requisite corporate power and has taken all requisite corporate action to execute and deliver this Warrant, to issue the Warrant and Warrant Stock and to carry out and perform all of its obligations hereunder. This Warrant has been duly authorized, executed and delivered on behalf of the Company and constitutes the valid and binding agreement of the Company, enforceable in accordance with its terms, except (i) as limited by applicable bankruptcy, insolvency, reorganization or similar laws relating to or affecting the enforcement of creditors' rights

generally and (ii) as limited by equitable principles generally. Any person executing this Warrant on behalf of the Company is a duly authorized officer of the Company with all necessary legal authority to bind the Company generally and with the specific legal authority to cause the Company to execute and deliver this Warrant.

6.2 Validity of Securities. This Warrant, when sold by the Company against the consideration therefor as provided herein, will be validly authorized, issued and fully paid. The issuance and delivery of the Warrant is not subject to any consent, approval, preemptive or any similar rights of the shareholders of the Company (which has not been duly secured or waived), including without limitation any pre-emptive rights, or any liens or encumbrances except for restrictions on transfer provided for herein or under applicable securities laws; and when and if shares of Warrant Stock are issued upon conversion and in accordance with the terms hereof and this Warrant is converted for such Warrant Stock, such securities will be, at each such issuance, validly issued shares of Warrant Stock in the Company's capital, in compliance with all applicable securities laws and free of any liens or encumbrances except for restrictions on transfer provided for herein, in the Constitutional Documents or under such applicable securities laws.

6.3 Capitalization. At the Issue Date, the authorized capital of the Company consists of 100,000,000 shares of Common Stock of which 18,935,594 shares are issued and outstanding; and 9,764,000 shares of Preferred Stock, none of which are issued and outstanding. As of the Issue Date, the Company has reserved a total of 3,700,000 shares of its Common Stock for issuance under its 2008 and 2011 Equity Incentive Plans, of which 2,532,734 shares are reserved for issuance upon exercise of outstanding options. The Company has also reserved 7,032,699 shares for issuance upon exercise of outstanding warrants.. Except as specified in this Section 6.3 there are no other options, warrants, conversion privileges or other contractual rights presently outstanding to purchase or otherwise acquire any authorized but unissued shares of the Company's capital stock or other securities.

6.4 No Conflict. The execution and delivery of this Warrant do not, and the consummation of the transactions contemplated hereby and thereby will not, conflict with, or result in any violation of, or default (with or without notice or lapse of time, or both), or give rise to a right of termination, cancellation or acceleration of any obligation or to a loss of a material benefit, under, any provision of the Company's Constitutional Documents, as amended, or any mortgage, indenture, lease or other agreement or instrument, permit, concession, franchise, license, judgment, order, decree, statute, law, ordinance, rule or regulation applicable to the Company, its properties or assets, the effect of which would have a material adverse effect on the Company or materially impair or restrict its power to perform its obligations as contemplated hereby.

6.5 Governmental and other Consents. As at the Issue Date, no consent, approval, order or authorization of, or registration, qualification, designation, declaration or filing with, any governmental authority or other person or entity is required on the part of the Company in connection with the issuance, sale and delivery of the Warrant and the Warrant

Stock, except such filings as shall have been made prior to and shall be effective on and as of the date hereof or filings to be made with the SEC and NASDAQ that will be made by the date due. All Company and stockholder consents required in connection with issuance of the Warrant and Warrant Stock have either been obtained by the Company or no such consents are required.

6.6 Exempt from Registration; Sale Status. As at the Issue Date, assuming the accuracy of the representations and warranties of Holder in Section 7 hereof: (i) the offer, sale and issuance of the Warrant and the Warrant Stock will be exempt from any registration requirements of the Securities Act, the registration and qualification requirements of applicable state securities laws, and (ii) the Warrant Stock issuable upon Exchange of this Warrant will be free of restrictions on transfer, except under the terms of Rule 144.

6.7 Delivery of Information; Accuracy. The Company acknowledges its delivery of certain Representations and Warranties in connection with the Loan Agreement and this Warrant (the "Representation Letter") to PFG, which Representations and Warranties form the basis for Holder purchasing this Warrant. As at the Issue Date, the information contained in the Representation Letter and all documents, instruments and other information delivered to Holder in connection therewith are true, correct, accurate and complete in all material respects.

6.8 Reporting Obligations. The Company is and will remain subject to the reporting requirements of Section 13 or 15(d) of the Exchange Act and (i) has filed and will file all required reports under Section 13 or 15(d) of the Exchange Act, as applicable, during the 12 months preceding the Issue Date, other than Form 8-K reports; and (ii) has submitted and will submit electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (a "Reporting Issuer"). Without limiting the foregoing, if the Company ceases to timely file periodic reports under the Exchange Act, the Company shall from time to time promptly provide a copy of its most recent annual, quarterly and other interim reports to Holder.

6.9 Quotation on NASDAQ. The Warrant Stock issuable upon exchange of this Warrant has been authorized for quotation on the Nasdaq Stock Market. Any filings required to be made by the Company by such market, including, without limitation, the Financial Industry Regulatory Authority ("FINRA") shall be timely made and any required authorizations or approvals for the consummation of the transactions contemplated herein, including, without limitation, the issuance of the Warrant Stock, have been obtained.

6.10 Non-Public Information. The Company shall not at any time provide PFG any material nonpublic information, unless pursuant to the Loan Agreement (and only so long as Holder has not made a request as provided therein not to receive material non-public information) and will publicly disclose the terms of this Agreement on Form 8-K under the Exchange Act (including it as an exhibit thereto if it deems it required under applicable law) promptly following the date hereof.

Section 7. Representations and Warranties of Holder . Holder hereby represents and warrants to the Company as of the Issue Date as follows:

7 . 1 Investment Experience. Holder is an "accredited investor" within the meaning of Rule 501 under the Securities Act, and was not organized for the specific purpose of acquiring the Securities. Holder is aware of the Company's business affairs and financial condition and has acquired sufficient information about the Company to reach an informed and knowledgeable decision to acquire the Securities. Holder has such business and financial experience as is required to give it the capacity to protect its own interests in connection with the purchase of the Warrant and the Warrant Stock.

7.2 Investment Intent. Holder is purchasing the Warrant for investment for its own account only and not with a view to, or for resale in connection with, any "distribution" thereof within the meaning of the Securities Act. Holder understands that neither the Warrant nor the underlying Warrant Shares have been registered under the Securities Act nor registered or qualified under any state securities law in reliance on specific exemptions therefrom, which exemptions may depend upon, among other things, the bona fide nature of Holder's investment intent as expressed herein.

7.3 Authorization. Holder has all requisite power and has taken all requisite action required of it to carry out and perform all of its obligations hereunder. The execution and delivery of this Warrant has been duly authorized, executed and delivered on behalf of Holder and constitutes the valid and binding agreement of Holder, enforceable in accordance with its terms, except (i) as limited by applicable bankruptcy, insolvency, reorganization or similar laws relating to or affecting the enforcement of creditors' rights generally and (ii) as limited by equitable principles generally. The consummation of the transactions contemplated herein and the fulfillment of the terms herein will not result in a breach of any of the terms or provisions of Holder's constitutional documents or instruments. Any person executing this Warrant on behalf of Holder is a duly authorized officer of Holder with all necessary legal authority to bind Holder generally and with the specific legal authority to cause Holder to execute and deliver this Warrant.

Section 8. Restrictive Securities Legend.

This Warrant and the Warrant Stock have not been registered under any securities laws. Accordingly, any Share certificates issued pursuant to the conversion of this Warrant shall (until receipt of an opinion of counsel in customary form that such legend is no longer necessary) bear the following legend:

> THIS WARRANT AND THE WARRANT SHARES ISSUABLE UPON CONVERSION HEREOF HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933 (THE "ACT"), AND HAVE BEEN ACQUIRED FOR INVESTMENT AND NOT WITH A VIEW TO, OR IN CONNECTION WITH, THE SALE OF DISTRIBUTION THEREOF. NO

SUCH SALE OR DISTRIBUTION MAY BE EFFECTED WITHOUT AN EFFECTIVE REGISTRATION STATEMENT RELATED THERETO OR AN OPINION OF COUNSEL IN CUSTOMARY FORM THAT SUCH REGISTRATION IS NOT REQUIRED UNDER THE ACT.

Section 9. Notices.

All notices to be given under this Warrant shall be in writing and shall be given: (i) personally, or (ii) by reputable private delivery service, (iii) by regular first-class mail, or certified mail return receipt requested, or (iv) by fax, or (v) by electronic mail. If sent by fax or electronic mail, such notice shall also be sent concurrently by one of the other methods provided herein (but shall be deemed delivered when sent, as provided below). Notices may be sent to the parties in accordance with their contact details specified below or to any other address, fax number or electronic mail address later designated in writing by a party. All notices shall be deemed to have been given upon delivery in the case of notices personally delivered, or at the expiration of one Business Day following delivery to the private delivery service, or two Business Days following the deposit thereof in the United States mail, with postage prepaid, or upon transmission during a Business Day if it is also during the Business Day where the notice where the notice is intended to be received (or the next Business Day if not transmitted during the Business Day in the time zone of the receiving party) in the case of notices sent by fax or electronic mail, but subject to reasonably concurrent transmission by another method, as specified above. The addresses for such communications shall be:

if to Holder, at

Partners for Growth IV, L.P.
1660 Tiburon Blvd.
Tiburon, California 94920
Attention: Chief Financial Officer
Fax: (415) 781-0510
Email: Notices@pfgrowth.com

with a copy (not constituting notice) to

Greenspan Law Office
Attn: Benjamin Greenspan, Esq.
620 Laguna Road
Mill Valley, CA 94941
Fax: (415) 738-5371
Email: ben@greenspan-law.com

with the original of this Warrant and any replacement, restatement or reissue of this Warrant to be delivered to:

Robert W. Baird & Co., Inc.

555 California Street, Suite 4900
San Francisco, CA 94104
ATTN: John Fitzgibbons
Phone # 415-627-3225
Email: JFitzgibbons@rwbaird.com

or

if to the Company, at

CANCER GENETICS, INC.
201 Route 17 N., 2nd Floor
Rutherford, NJ 07070
Attn: Jay Roberts
Tel: (201) 636-7231
Email: Jay.Roberts@cgix.com

with a copy to:

Lowenstein Sandler LLP
Attn: Alan Wovsaniker
65 Livingston Avenue
Roseland, New Jersey 07068
Tel: (973) 597-2564
Fax: (973) 597-2565
Email: awovsaniker@lowenstein.com

Each party hereto may from time to time change its address for notices under this Section 9 by giving at least 10 calendar days' notice of such changes address to the other party hereto.

Section 10. Amendments and Waivers.

This Warrant and any term hereof may be changed, waived, discharged or terminated only by an instrument in writing signed by the party against which enforcement of such change, waiver, discharge or termination is sought.

Section 11. Applicable Law; Severability.

This Warrant shall be governed by and construed and enforced in accordance with the laws of the State of Delaware. If any one or more of the provisions contained in this Warrant, or any application of any provision thereof, shall be invalid, illegal, or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions contained herein and all other applications of any provision thereof shall not in any way be affected or impaired thereby.

Section 12. Electronic Execution of Warrant.

The parties agree that the Warrant may be signed electronically by a party and, in such case, this Warrant shall be deemed to be an electronic record as such term is defined in Section 1633.2(g) of the Uniform Electronic Transactions Act enacted in the State of California (UETA) signed by the parties using electronic signatures (as defined in Section 1633.2(h) of UETA. The parties irrevocably agree to recognize and accept the use of electronic signatures and records in connection with the execution, storage and delivery of the Warrant, whether for purposes of transfer, enforcement or otherwise. Accordingly, and consistent with Sections 1633.12(d) and 1633.13 od UETA, any requirement that the Warrant must be tendered in original form or manually signed shall be deemed satisfied by delivery of any transmitted or delivered paper form of the Warrant and the same may not be excluded as evidence of the Warrant in any proceeding solely because the Warrant was executed in whole or in part in electronic form. As an ongoing obligation, the Company shall procure that no transfer agent, acquiring party or Company equityholder representative (e.g., responsible person for distributing proceeds of a merger or sale transaction to equityholders) refuse to accept delivery of this Warrant as electronically signed, delivered and/or stored as a condition to receiving consideration due in connection with this Warrant. To the extent that a third party fails to recognize this Warrant as electronically signed, the Company shall treat this Warrant as lost or stolen under Section 2(b) of this Warrant (except that Holder shall not be required to give any indemnity or undertaking as a condition to replacement of this Warrant) and shall promptly manually execute and deliver to Holder for its manual execution a replacement Warrant, all costs of which shall be for the account of the Company as contemplated in Section 2(c).

Section 13. Construction.

Section headings are only used in this Agreement for convenience. The Company and Holder each acknowledge that the headings may not describe completely the subject matter of the applicable Section, and the headings shall not be used in any manner to construe, limit, define or interpret any term or provision of this Agreement. This Agreement has been fully reviewed and negotiated between the parties and no uncertainty or ambiguity in any term or provision of this Agreement shall be construed strictly against either party under any rule of construction or otherwise.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the Company has caused this Warrant to be duly executed on the day and year first above written.

COMPANY:

CANCER GENETICS, INC.

By: /s/ John A. Roberts

Name: John A. Roberts

Title: COO & EVP Finance

ACKNOWLEDGED AND AGREED:

HOLDER:

Partners for Growth IV, L.P.

By: /s/ Philip Lawson
Philip Lawson , Manager of Partners for Growth IV, LLC,
Its General Partner

Exhibit A

To: CANCER GENETICS, INC.

ELECTION TO EXCHANGE OR EXERCISE

The undersigned hereby exercises its right to Exchange its Warrant for _____ fully paid, validly issued and nonassessable:

c Shares of Common Stock

The undersigned hereby exercises its right to Exercise its Warrant for _____ fully paid, validly issued and nonassessable:

c Shares of Common Stock

[check one box]

covered by the attached Warrant in accordance with the terms thereof.

and requests that certificates or other legal evidence of ownership of such Shares be issued in the name of, and delivered to:

_____
_____
_____

Date: _____ [Holder]

By _____
Name:
Title:

Exhibit B

ASSIGNMENT FORM

To: CANCER GENETICS, INC.

The undersigned hereby assigns and transfers this Warrant to

_____
(Insert assignee's social security or tax identification number)

_____
(Print or type assignee's name, address and postal code)
_____

_____

and irrevocably appoints _____ to transfer this Warrant on the books of the Company.

Date: _____ Partners For Growth IV, L.P.

By _____
Name: _____, Manager of
Partners for Growth IV, LLC, Its General Partner

EXHIBIT C

RELEASE

The undersigned individual ("Releasor"), on his own behalf and on behalf of his heirs, beneficiaries and assigns, hereby releases and forever discharges Cancer Genetics, Inc. and its subsidiaries and all of their respective officers and directors, successors and assigns (collectively, "Released"), both individually and in their official capacities, from any and all liability, claims, demands, actions and causes of action of any type (collectively, "Claims") which Releasor has had in the past, now has, or might now have, through the date of your execution of this Release, in any way resulting from, arising out of or connected with your employment by Cancer Genetics, Inc. and its subsidiaries (collectively, "Company") or its termination or pursuant to any federal, state or local employment law, regulation or other requirement (including without limitation Title VII of the Civil Rights Act of 1964, as amended; the Age Discrimination in Employment Act, as amended ("ADEA"); the Americans with Disabilities Act, as amended); or violated the New Jersey Conscientious Employee Protection Act (CEPA) or the New Jersey Family Leave Act.

The Company, on its own behalf and on behalf of the Released, hereby releases and forever discharges the Releasor and his heirs, beneficiaries and representatives and assigns, both individually and in their official capacities, from any and all Claims which it has had in the past, now has, or might now have, through the date of your execution of this Release, in any way resulting from, arising out of or connected with your employment by the Company or its termination. By acceptance of or reliance on this release of Claims by Releasor, the Company promises that neither it nor any of the other Released affiliated with the Company will take any action that is designed, specifically as to you or with respect to a class of similarly situated former employees, to reduce or abrogate, or may reasonably be expected to result in an abridgement or elimination of, any rights of indemnification or contribution available to Releasor, as described above, or under any such policy or policies of directors and officers liability insurance, unless any such abridgement-or elimination of rights also is generally applicable to all then-current officers and employees of the Company.

Excluded from the scope of this Release is (i) any claim by Releasor for payment of wages owed for time worked, as well as any accrued, unused PTO through February 3, 2017, or reimbursement of expenses or under the terms of any of the Company's employee qualified and non-qualified benefit plans (including without limitation the Company's employee pension plan and profit sharing plan); (ii) any claim or right of Releasor under any policy Or policies of directors and officers liability insurance maintained by the Company as in effect from time to time; and (iii) any right of or for indemnification or contribution pursuant to contract and/or the Articles of Incorporation or By-Laws (or other charter documents) of the Company that Releasor has or hereafter may acquire if any claim is asserted or proceedings are brought against Releasor including, without limitation, if by any governmental or regulatory agency, or by any customer, creditor, employee or shareholder of the Company, or by any self-regulatory organization, stock exchange or the like, arising out of or related or allegedly related to the undersigned individual being or having been an officer or employee of the Company or to any of his actions, inactions or activities as an officer or employee of the Company. Also excluded from this release are any Claims which cannot be waived by law, including Releasor's right to file a charge with or participate in an investigation or proceeding brought by a government agency, including the

Equal Employment Opportunity Commission ("EEOC"), the National Labor Relations Board, the Occupational Safety and Health Administration, the Securities and Exchange Commission or any other federal, state or local governmental agency or commission ("Government Agencies"), right to receive vested retirement benefits, or any rights or claims that may arise after the date this Agreement is executed. Releasor is waiving any right to recover money, either individually or in a class or collective action or any other judicial proceeding on your own behalf. However, nothing in this Agreement limits Releasor's right to receive an award from any Government Agency for information provided to any Government Agency. Releasor acknowledges that he is knowingly and voluntarily waiving and releasing any rights he may have under the ADEA, as amended.

Pursuant to the terms of the Employment Agreement by and between Releasor and the Company dated March 17, 2014, and in exchange for the promises made by and in consideration for all the terms entered into by Releasor in this Release, the Company agrees to pay Releasor: (i) amounts equal to six (6) months of Releasor's current base salary (Paragraph 5.2(b)(iii) of the Employment Agreement), in twelve (12) payments of $11,916.67 (eleven thousand, nine hundred sixteen dollars and sixty seven cents), which will be paid in accordance with the Company's normal payroll schedule, beginning within fourteen (14) days after this Release has been fully executed and the seven (7) day revocation period has passed; and (ii) a lump sum amount of $16,500 (sixteen thousand, five hundred dollars and no cents), the equivalent of three (3) weeks of current base salary (pursuant to the separation program), and a bonus amount equal to twenty-eight thousand eight hundred dollars ($28,800), for the 2016 calendar year, which shall be paid in accordance with the Company's normal payroll schedule and beginning within fourteen (14) days after this Release has been fully executed and the seven (7) day revocation period has passed. Applicable statutory deductions, including state and federal income taxes and Social Security taxes, shall be withheld by the Company from all payments. The Company will issue a Form W-2 to Releasor in connection with these payments.

Further, in additional exchange for the promises made by and in consideration for all the terms entered into by Releasor in this Release, the Company agrees that Releasor's three thousand, three hundred and thirty-four (3,334) unvested CGIX restricted stock awards (RSAs) granted on May 22, 2014 shall become fully vested in Releasor on February 3, 2017. Company agrees to mail certificates representing the shares underlying the RSAs to Releasor within thirty (30) days of February 3, 2017. The terms of this Release related to Releasor's RSAs shall supersede and replace Sections 2(a) and 2(b) of the Restricted Stock Agreement by and between the Releasor and the Company with an effective date of May 22, 2014. The Company agrees that Releasor's thirty-four thousand and five hundred (34,500) unvested, and fifty-five thousand and five hundred (55,500) vested, CGIX non-qualified stock options (NQSOs) granted on December 11, 2014 shall have an expiration date of March 21, 2018. The terms of this Release related to Releasor's NQSOs shall supersede and replace Sections E and G of the Stock Option Grant Agreement by and between the Releasor and the Company with an effective date of December 11, 2014.

Finally, in additional exchange for the promises made by and in consideration for all the terms entered into by Releasor in this Release, the Company agrees to waive its rights with regard to Section 5.2(c)(i) of the Employment Agreement by and between Releasor and the Company dated March 17, 2014.

The undersigned individual further acknowledges that he has been advised by this writing that: (a) his waiver and release in this Release does not apply to any rights or claims that may arise after the execution date of this Release; (b) that he has the right to consult with an attorney prior to executing this Release; (c) he has up to the entirety of until forty-five (45) days after the date he received this Release executed by the Company in which to consider this Release (although if the undersigned individual does execute this Release before the end of such forty-five (45) days, he will also sign the Consideration Period waiver below); (d) he has seven (7) days following his execution of this Release to revoke this Agreement by so notifying the Company; and (e) this Release shall not be effective until the date upon which the this seven (7) day revocation period has expired unexercised (the "Effective Date"), which shall be the eighth day after this Release is executed by the undersigned individual. Upon the lapse of said seven (7) day period without revocation, this Release will have effect retroactively to the date it was signed by the Company.

This Release is part of a separation program for which those employees identified on Exhibit 1 attached hereto are eligible. Exhibit 1 includes the job titles and ages of all employees in the decisional unit who are eligible for severance benefits, the job titles and ages of all employees in the decisional unit who are not eligible for severance benefits, as well as other information regarding the separation program.

This Release does not constitute an admission by the Company or by the undersigned individual of any wrongful action or violation of any federal, state, or local statute, or common law rights, including those relating to the provisions of any law or statute concerning employment actions, or of any other possible or claimed violation of law or rights. This Release is entered into without reliance on any promise or representation, written or oral, other than those expressly contained herein, and it supersedes any other such promises, warranties or representations, other than the Employment Agreement by and between Releasor and the Company dated March 17, 2014, the terms of which shall remain in full force and effect. This Release may not be modified or amended except in a writing signed by both the undersigned individual and a duly authorized officer of the Company. This Release will bind the heirs, personal representatives, successors and assigns of both the undersigned individual and the Company, and inure to the benefit of both the undersigned individual and the Company and their respective heirs, successors and assigns. If any provision of this Release is determined to be invalid or unenforceable, in whole or in part, this determination will not affect any other provision of this Release and the provision in question will be modified by the court so as to be rendered enforceable. This Agreement will be deemed to have been entered into and will be construed and enforced in accordance with the laws of the state of New Jersey as applied to contracts made and to be performed entirely within New Jersey.

Cancer Genetics, Inc.	Edward J. Sitar
By: Cheryl Brafa, HR Manager	
Date: 2/3/2017	Date: 2/3/17

CONSIDERATION PERIOD WAIVER

I, Edward J. Sitar understand that I have the right to take at least 45 days to consider whether to sign this Release, which I received on 2/3/17 2+. If I elect to sign this Release before 45 days have passed, I understand I am to sign and date below this paragraph to confirm that I knowingly and voluntarily agree to waive the 45-day consideration period.

Edward J. Sitar

Date: 2/3/17

Exhibit 21.1

Subsidiaries of Cancer Genetics, Inc.

Name	State of Incorporation or Organization
Cancer Genetics Italia, S.r.l.	Italy
Cancer Genetics (India) Private Limited	India
Gentris, LLC	Delaware
BioServe Biotechnologies (India) Private Limited	India
Gentris Hong Kong Limited	China
Gentris Shanghai Pharma Science & Technology Co. Ltd	China

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-191520, 333-191521, 333-196198, 333-205903 and 333-214599), on Form S-3 (No.333-196374) and on Form S-1 (No. 333-215284) of Cancer Genetics, Inc. of our report dated March 23, 2017, relating to the consolidated financial statements of Cancer Genetics, Inc. and Subsidiaries appearing in the Annual Report on Form 10-K of Cancer Genetics, Inc. for the year ended December 31, 2016.

/s/ RSM US LLP

New York, New York
March 23, 2017

Exhibit 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Panna L. Sharma, certify that:

1. I have reviewed this annual report on Form 10-K of Cancer Genetics, Inc. (the "Registrant");

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the Registrant as of, and for, the periods presented in this report;

4. The Registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the Registrant and have:

a. designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the Registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b. designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c. evaluated the effectiveness of the Registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d. disclosed in this report any change in the Registrant's internal control over financial reporting that occurred during the Registrant's most recent fiscal quarter (the Registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the Registrant's internal control over financial reporting; and

5. The Registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the Registrant's auditors and the audit committee of the Registrant's board of directors (or persons performing the equivalent functions):

a. all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the Registrant's ability to record, process, summarize and report financial information; and

b. any fraud, whether or not material, that involves management or other employees who have a significant role in the Registrant's internal control over financial reporting.

Date: March 23, 2017

/s/ Panna L. Sharma
Panna L. Sharma
President, Chief Executive Officer and Director
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, John A. Roberts certify that:

1. I have reviewed this annual report on Form 10-K of Cancer Genetics, Inc. (the "Registrant");

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the Registrant as of, and for, the periods presented in this report;

4. The Registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the Registrant and have:

a. designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the Registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b. designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c. evaluated the effectiveness of the Registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d. disclosed in this report any change in the Registrant's internal control over financial reporting that occurred during the Registrant's most recent fiscal quarter (the Registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the Registrant's internal control over financial reporting; and

5. The Registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the Registrant's auditors and the audit committee of the Registrant's board of directors (or persons performing the equivalent functions):

a. all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the Registrant's ability to record, process, summarize and report financial information; and

b. any fraud, whether or not material, that involves management or other employees who have a significant role in the Registrant's internal control over financial reporting.

Date: March 23, 2017

/s/ John A. Roberts
John A. Roberts
Chief Operating Officer and
Executive Vice President, Finance
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the annual report of Cancer Genetics, Inc. (the "Company") on Form 10-K for the year ended December 31, 2016 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Panna L. Sharma, President, Chief Executive Officer and Director of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 23, 2017

/s/ Panna L. Sharma

Panna L. Sharma
President, Chief Executive Officer and Director

The foregoing certification is being furnished solely pursuant to 18 U.S.C. Section 1350 and is not being filed as part of the Report or as a separate disclosure document.

Exhibit 32.2

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the annual report of Cancer Genetics, Inc. (the "Company") on Form 10-K for the year ended December 31, 2016 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, John A. (Jay) Roberts, Chief Operating Officer and Executive Vice President, Finance of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 23, 2017

/s/ John A. Roberts

John A. Roberts
Chief Operating Officer and
Executive Vice President, Finance

The foregoing certification is being furnished solely pursuant to 18 U.S.C. Section 1350 and is not being filed as part of the Report or as a separate disclosure document.