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

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2019

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: 000-24249

Interpace Biosciences, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**22-2919486**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

Morris Corporate Center 1, Building C
300 Interpace Parkway, Parsippany, NJ 07054

(Address of principal executive offices and zip code)

(855) 776-6419

(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.01 per share	IDXG	The Nasdaq Stock Market LLC

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

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

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 [X]

Indicate by check mark whether 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 [X] No [ ]

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes [X] No [ ]

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

Large accelerated filer [ ] Accelerated filer [ ] Non-accelerated filer [X] Smaller reporting company [X]
Emerging growth company [ ]

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. [ ]

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes [ ] No [X]

The aggregate market value of the registrant's common stock, $0.01 par value per share, held by non-affiliates of the registrant on June 30, 2019, the last business day of the registrant's most recently completed second fiscal quarter, was $27,821,137 (based on the closing sales price of the registrant's common stock on that date). Shares of the registrant's common stock held by each officer and director and each person who owns 10% or more of the outstanding common stock of the registrant have been excluded because such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of April 17, 2020, 4,043,673 shares of the registrant's common stock, $0.01 par value per share, were issued and outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant's definitive proxy statement for the 2020 annual meeting of stockholders, or the Proxy Statement, to be filed within 165 days of the end of the fiscal year ended December 31, 2019 (as permitted by recent Securities and Exchange Commission guidance, including Release No. 34-88465 and Compliance and Disclosure Interpretation 104.18), are incorporated by reference in Part III hereof. Except with respect to information specifically incorporated by reference in this Annual Report on Form 10-K, the Proxy Statement is not deemed to be filed as part hereof.

Interpace Biosciences, Inc.
Annual Report on Form 10-K

FORWARD LOOKING STATEMENT INFORMATION

This Form 10-K, and the documents incorporated by reference in this document, our press releases and oral statements made from time to time by us or on our behalf, may contain "forward-looking statements" within the meaning of the federal securities laws, including Section 27A of the Securities Act of 1933, as amended (or the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (or the "Exchange Act"). In this context, forward-looking statements are not historical facts and include statements about our plans, objectives, beliefs and expectations. Forward-looking statements include statements preceded by, followed by, or that include the words "believes," "expects," "anticipates," "seeks," "plans," "estimates," "intends," "projects," "targets," "should," "could," "may," "will," "can," "can have," "likely," the negatives thereof or similar words and expressions. These forward-looking statements are contained throughout this Form 10-K, including, but not limited to, statements found in Part I – Item 1 – "Business" and Part II – Item 7 – "Management's Discussion and Analysis of Financial Condition and Results of Operations."

Forward-looking statements are only predictions and are not guarantees of future performance. These statements are based on current expectations and assumptions involving judgments about, among other things, future economic, competitive and market conditions and future business decisions, all of which are difficult or impossible to predict accurately and many of which are beyond our control. These predictions are also affected by known and unknown risks, uncertainties and other factors that may cause our actual results to be materially different from those expressed or implied by any forward-looking statement. Many of these factors are beyond our ability to control or predict. Our actual results could differ materially from the results contemplated by these forward-looking statements due to a number of factors. Such factors include, but are not limited to, the following:

- adverse impact of Coronavirus (COVID-19) pandemic due to the slowdown in demand for our clinical services and pharma services, a reduction in samples received and testing volume and potential delayed third party collections and other factors;
- we have a history of operating losses, and our clinical services and pharma services have generated limited revenue;
- we expect to incur net losses for the foreseeable future and may never achieve or sustain profitability;
- our limited operating history and the limited revenue generated from our business thus far and fluctuating quarterly and annual revenue and operating results, including as a result of how we recognize revenue;
- we depend on sales and reimbursements from our clinical services for more than 50% of our revenue, and we will need to generate sufficient revenue from these and other products and/or solutions that we develop or require to grow our business;
- we rely on third parties to process and transmit claims to payers for our clinical services, and any delay, data loss, or other disruption in processing or transmitting could have an adverse effect on our revenue and financial condition;
- our ability to utilize our commercial and operating experience to sell our clinical and pharma services;
- our ability to compete successfully in the markets our clinical services and pharma services operate in;
- our ability to obtain, retain and increase sufficient levels of third party reimbursement for our molecular diagnostic tests in a changing and challenging reimbursement environment, including our current dependence on a concentrated number of third-party payers and the lack of timeliness of their payments, and the potential failure of such payments to ever occur;
- our billing practices and those of our third-party billing providers to effectively bill and collect on claims for the sale of our tests;
- our revenue recognition is based in part on our estimates for future collections and such estimates may prove to be incorrect;

- a deterioration in the collectability of our accounts receivable could have a material adverse effect on our business, financial condition and results of operations;
- our inability to finance our business on acceptable terms in the future may limit our ability to grow our business, develop and commercialize products and services, develop and commercialize new molecular diagnostic solutions and technologies and expand our pharma services;
- our ability to comply with financial covenants under our current line of credit facility and comply with our debt obligations and our ability to expand our working capital borrowing base to provide sufficient working capital financing during growth periods;
- we have issued convertible preferred stock and may issue additional convertible preferred stock in the future, and the terms of our preferred stock may dilute our common stock;
- two private equity firms and their affiliates control, on an as-converted basis, 66% of our fully diluted outstanding shares of common stock through their holdings of Series B Convertible Preferred Stock, par value $0.01 per share ("Series B Preferred Stock"), and this concentration of ownership along with having authority for designation rights for a majority of our directors will have a substantial influence on our decisions;
- billing for our clinical services tests is complex, and we must dedicate substantial time and resources to the billing process to be paid for our clinical services;
- we depend on a few payers for a significant portion of our revenue for our clinical services, and if one or more significant payers stops providing reimbursement or decreases the amount of reimbursement for our tests, our revenue could decline;
- if payers do not provide reimbursement, rescind or modify their reimbursement policies or delay payments for clinical services, our commercial success could be compromised;
- developing new tests and related services and solutions includes a lengthy and complex process with uncertain results;
- the effect of potential adverse findings resulting from regulatory audits of our billing and payment practices and the impact such results could have on our clinical services;
- the demand for our molecular diagnostic tests from physicians and patients;
- our products and services continuing to perform as expected;
- claims against us for inaccurate results from our molecular diagnostic tests;
- our obligations to make royalty and milestone payments to our licensors;
- our ability to obtain data and samples to perform sufficient clinical studies to successfully publish data demonstrating the clinical relevance and value of our molecular diagnostic tests, including to support sufficient levels of third party reimbursement;
- our dependence on third parties for the supply of some of the materials used in our molecular diagnostic tests and pharma services;
- our ability to scale our operations or delays or reagent and supply shortages for our tests and services;
- our ability to develop or acquire tests, services or solutions;

- the ability of our clinical services to enter into additional clinical study collaborations with highly regarded institutions;
- the effect current and future laws, licensing requirements and regulation have on our business including the changing U.S. Food and Drug Administration environment as it relates to molecular diagnostics and pharma services and laboratory developed tests (LDT's);
- changes in governmental regulations mandating price controls and limitations on patient access to our products and services;
- if we fail to comply with Federal, State and foreign laboratory licensing requirements, we could lose the ability to perform our tests or experience disruptions to our business;
- legislation reforming the U.S. healthcare system;
- a failure to comply with Federal and State laws and regulations pertaining to our payment practices;
- our ability to comply with fraud and abuse laws or payer regulations could result in our being excluded from participation in Medicare, Medicaid or other governmental payer programs;
- compliance with numerous statutes and regulations pertaining to our business;
- the effect of The Eliminating Kickbacks in Recovery Act of 2018 as it potentially impacts our ability to incentivize our sales personnel appropriately;
- our ability to realize all of the anticipated benefits of the acquisition of the Biopharma Business of Cancer Genetics, Inc. or those benefits, if any, taking longer to realize than expected;
- if pharmaceutical and biotech companies, universities and contract research organizations performing clinical trials decide not to use our tests and services, we may be unable to generate sufficient revenue to sustain our pharma services;
- if we fail to perform our pharma services in accordance with contractual and regulatory requirements, and ethical considerations, we could be subject to significant costs or liability;
- our ability to compete in the markets our clinical services operate in;
- our ability to attract and retain key employees and management personnel;
- our reliance on our sales and marketing forces for future business growth and our ability to continue to expand our sales and marketing forces;
- our limited experience in marketing and selling our products;
- the ability of our molecular diagnostic tests to compete successfully with physicians and members of the medical community who use traditional methods to diagnose gastrointestinal and endocrine cancers, competitors offering broader product lines outside of the molecular diagnostic testing market and having greater brand recognition than we do, and companies with greater financial resources;
- our ability to license rights to use technologies in order to commercialize new products and services;
- our involvement in future litigation against us or our ability to collect on judgements found in our favor;
- the effect of acts of nature, seasonal results and adverse weather conditions, hurricanes and floods, on our business and our suppliers;

- our use of hazardous materials;
- the susceptibility of our information systems to security breaches, loss of data and other disruptions;
- catastrophic loss of our laboratories;
- our ability to obtain and maintain sufficient qualified laboratory space to meet our processing needs for all of our business as well as our ability to pass regulatory inspections and continue to be Clinical Laboratory Improvement Amendments ("CLIA") and the College of American Pathologists ("CAP") certified or accredited;
- compliance with the U.S. Foreign Corrupt Practices Act and anti-bribery laws;
- our ability to respond to rapid scientific changes in the areas in which we operate;
- our compliance with our license agreements and our ability to protect and defend our intellectual property rights;
- patent infringement claims against us;
- changes in U.S. and global patent law;
- tax reform legislation;
- stock dilution;
- changes in financial accounting standards or practices;
- exposure to international law, regulations and risk as a result of international expansion;
- we may acquire businesses or assets or make investments in other companies or testing, service or solution technologies that could harm our operating results, dilute our stockholders' ownership, increase our debts or cause us to incur significant expense;
- the impact of contingent liabilities on our financial condition;
- the results of any future impairment testing for intangible assets as required under U.S. generally accepted accounting principles ("GAAP");
- our ability to maintain our listing with Nasdaq;
- our ability to maintain and implement effective internal controls over financial reporting especially as we are consolidating operations;
- if our information technology or communications systems fail or we experience a significant interruption in their operation, our reputation, business and results of operations could be materially and adversely affected;
- the impact of future issuances of debt, common and preferred shares on stockholders' interest and stock price;
- our ability to report financial results on a timely and accurate basis; and
- our ability to manage our growth or unexpected declines.

Please see Part I - Item 1A – "Risk Factors" of this Form 10-K, as well as other documents we file with the U.S. Securities and Exchange Commission, or the SEC, from time-to-time, for other important factors that could cause our actual results to differ materially from our current expectations and from the forward-looking statements discussed herein. Because of these and other risks, uncertainties and assumptions, you should not place undue reliance on these forward-looking statements. In addition, these statements speak only as of the date of this Form 10-K and, except as may be required by law, we undertake no obligation to revise or update publicly any forward-looking statements for any reason.

In this Form 10-K, references to "we," "our," "us," "Interpace" and the "Company" refer to Interpace Biosciences, Inc., including consolidated subsidiaries as of December 31, 2019.

PART I

ITEM 1. BUSINESS

Company Overview

We are an emerging leader in enabling precision medicine principally in oncology by offering specialized services along the therapeutic value chain from early diagnosis and prognostic planning to targeted therapeutic applications through our clinical and pharma services. Through our clinical services, we enable physicians to personalize the clinical management of each individual patient by providing genomic information to better diagnose, monitor and inform cancer treatment. Our clinical services provide clinically useful molecular diagnostic tests, bioinformatics and pathology services for evaluating risk of cancer by leveraging the latest technology in personalized medicine for improved patient diagnosis and management. Through our pharma services, we develop, commercialize and provide molecular- and biomarker-based tests and services and provide companies with customized solutions for patient stratification and treatment selection through an extensive suite of molecular and biomarker-based testing services, DNA- and RNA- extraction and customized assay development and trial design consultation. Our pharma services provide pharmacogenomics testing, genotyping, biorepository and other specialized services to the pharmaceutical and biotech industries and advance personalized medicine by partnering with pharmaceutical, academic and technology leaders to effectively integrate pharmacogenomics into drug development and clinical trial programs with the goals of delivering safer, more effective drugs to market more quickly, and improving patient care.

Customer Category	Types of Customers	Nature of Services
Clinical services	● Hospitals ● Physicians ● Cancer Centers ● Clinics	Clinical services provide information on diagnosis, prognosis and predicting treatment outcomes of cancers to guide patient management.
Pharma services	● Pharmaceutical companies ● Biotech companies ● Contract Research Organizations ● Academic Researchers ● Diagnostic companies	Pharma services provide expert-based collaborative solutions, customized assays and high quality services in support of their pharmaceutical and biotechnology clients' therapeutic development programs. By deploying deep scientific and medical expertise, pharma services support all phases of drug development and accelerate their clients' clinical programs.

Our clinical services' customers consist primarily of physicians, hospitals and clinics. Our largest customer for ThyGeNEXT® and ThyraMIR® products in 2019 was Laboratory Corporation of America® or LabCorp. Our revenue channels include reimbursement by Medicare, Medicare Advantage, Medicaid, and direct client billings (for example, hospitals and clinics), and commercial payers such as Blue Cross Blue Shield, Aetna, Cigna, United Healthcare and others.

We partner with pharmaceutical and biotech companies and clinicians as oncology diagnostic specialists by supporting development and patient care from bench to bedside. Pharmaceutical and biotech companies work with us to provide molecular profiles on clinical trial participants. Similarly, we believe the oncology industry is undergoing a rapid evolution in its approach to diagnostic, prognostic and treatment outcome testing, embracing precision testing and individualized medicine as a means to drive higher standards of patient treatment and disease management. These profiles may help identify biomarker and genomic variations that may be targetable for developing novel personalized therapeutics or that may be responsible for differing responses to existing 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 pharma services' customers consist primarily of pharmaceutical and biotech companies.

Potential Impact of Coronavirus (COVID-19) pandemic

We have taken what we believe are all necessary precautions to safeguard our employees from the Coronavirus (COVID-19) pandemic. We are following CDC guidance and local restrictions. All employees who do not work in a lab are currently on a telecommunication work arrangement. Our employees in the lab are wearing what we believe is appropriate protective gear. If an employee tests positive, then we will take necessary and available precautions in the lab to reduce the potential spread of COVID-19, including decontamination and temporary lab closures. There can be no assurance that key employees will not become ill or that we will able to continue to operate our labs. We have furloughed a significant number of employees as a result of reductions in customer demand and we have closed our administrative offices. Our management, finance staff and sales personnel have generally been able to successfully work remotely. Our labs require in-person staffing and as of the date of this report, we have been able to successfully operate our labs though a combination of social distancing and protective equipment.

The extent to which the COVID-19 pandemic impacts our operations will depend on future developments, which are highly uncertain and cannot be predicted at this time, and include the duration, severity and scope of the outbreak and the actions taken to contain or treat the coronavirus outbreak. In particular, the continued spread of the coronavirus globally is adversely affecting global economies and financial markets resulting in an economic downturn which could materially and adversely impact our operations including, without limitation, the functioning of our laboratories, the availability of supplies including reagents, the progress and data collection of our pharma services, customer demand and travel and employee health and availability.

We believe that the COVID-19 pandemic will adversely impact our results of operations, cash flows and financial condition for the first and second quarters of fiscal 2020 and possibly beyond. Our fiscal 2020 first quarter revenue has been impacted by lower than expected clinical service volume throughout March 2020. We believe this has resulted from the temporary reduction in non-essential testing procedures in connection with the COVID-19 pandemic. While we experienced a substantial increase in clinical services revenue compared to the first quarter of 2019, our March 2020 test volume decreased substantially compared to our February 2020 volume. Our pharma services preliminary first quarter revenue increased throughout the first quarter and average daily accessions improved in March 2020 as compared to January and February 2020.

We continue to monitor the rapidly evolving situation and guidance from authorities, including federal, state and local public health authorities and may take additional actions based on their recommendations. In these dynamic circumstances, there may be developments outside our control requiring us to adjust our operating plan.

Currently volume of testing in our clinical services labs has slowed, as noted above, and we believe we have taken the necessary actions to support the lower volume. Our pharma services customers have indicated that there could be a slowdown in clinical trials but thus far volume has not suffered. All of our labs are currently operating and we believe we are appropriately staffed for the volume of work. At this time, we do not anticipate any lab closures beyond temporary work stoppages from time to time to clean and disinfect the labs. To date, we have not lost any of our customer base and we are not aware of any customers with potential bankruptcy or payment issues. Lab supplies including reagents have been secured to mitigate any potential supply chain issues for the foreseeable future and we are not observing any shortages due to supply chain issues. Our third party clinical services billing and collections company has taken steps to continue operations remotely. There have been indications that payer processing may slow down but so far there has been little or no material impact to our collections**.**

As of April 21, 2020 we have approximately $18.4 million of cash on hand which includes $3.4 million drawn on our credit facility, $2.1 million in advances received under the Centers for Medicare & Medicaid Services (CMS) accelerated and advance payment program, and $0.65 million in the form of a grant received from the Department of Health and Human Services, which is subject to certain conditions regarding its use, including developing coronavirus and serology tests. Also as of April 21, 2020, the Company has maximized its borrowing under its line of credit facility and therefore has no further availability on its credit facility; however, we are in the process of seeking to expand availability under the credit facility from $4.0 to $8.0 million on terms similar to existing terms, but there can be no assurance that such credit line extension will be granted or that it will be granted on commercially reasonable and acceptable terms. As of the date of this report, the Company believes it will be able to access additional financing though commercial bank loans and the sale of its securities, although there can be no assurance that financing market conditions will not change or that such financing can be obtained. It is anticipated that if business conditions remain at these lower levels for clinical services customers and our pharma services customers similarly reduce their demand until the end of July and thereafter demand recovers to pre COVID-19 pandemic levels, then we believe we will have ample resources to continue to service our customers. However, should business conditions deteriorate further or last longer than anticipated, then our business may be materially and adversely affected.

The Company's leadership team is monitoring the situation on a daily basis and has developed contingency plans to potentially mitigate the anticipated adverse financial impact of the COVID-19 pandemic. These contingency plans include significant cost saving actions to offset any volume shortfall and additional action plans to react to further potential declines.

As of April 2020, we are in the process of launching a new product line of antibody testing for the COVID-19 virus. We are currently validating a serological, or antibody, test that measures the amount of antibodies present in the blood. In response to an infection, such as COVID-19, the body develops an overall immune response to fight the infection. One component of the immune system's response is the development of antibodies that attach to the virus and help eliminate it. Antibody tests detect the body's immune response to the infection caused by the virus rather than detecting the virus itself. The FDA has issued guidance allowing companies to market serological tests that have been validated following notification to FDA. Validated antibody tests offered under the policy should, among other things, include in test reports language explaining that negative results do not rule out COVID-19 infection and that follow-up testing with a molecular diagnostic should be considered to rule out infection. There is no guarantee that we will be successful in completing development or realize any revenue or benefit from these efforts.

Market Overview

Global Molecular Diagnostic Market

The global molecular diagnostics market is estimated to be approximately $8.7 billion in 2019 and is a segment within the estimated $69.2 billion in vitro diagnostics market in 2019 according to statistics from Kalorama Information, publisher of *the Worldwide Market for In Vitro Diagnostic Tests.*

The esoteric testing market size overall was valued at over $20 billion in 2018 and is expected to witness around 10.1% compounded annual growth rate ("CAGR") from 2019 to 2025, according to a report published by Global Market Insights in May 2019. We believe that the specialty molecular diagnostics market offers significant growth and strong patient value given the substantial opportunity it affords to lower healthcare costs by helping to reduce unnecessary surgeries and ensuring the appropriate frequency of monitoring. We are keenly focused on growing our test volumes, securing additional insurance coverage and reimbursement, maintaining and growing our current reimbursement and supporting revenue growth for our molecular diagnostic tests, introducing related first line product and service extensions, as well as expanding our business by developing and promoting synergistic products in our markets. We also believe that BarreGEN® is a potentially significant pipeline product, and we are providing necessary resources to accelerate our development process. Further, we believe BarreGEN® is synergistic with our capabilities in the gastrointestinal market, which is one of the sectors in which we operate.

We believe the total global clinical trial market to be approximately $47 billion with pharma services representing a large portion of this amount and being one of the fastest growing sectors of the broader based diagnostic marketplace.

United States Clinical Oncology Market

Despite many advances in the treatment of cancer, it remains one of the greatest areas of unmet medical need. In 2018, the World Health Organization attributed 9.6 million deaths globally to cancer, which is about one in six deaths. 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 Agency for Healthcare Research and Quality estimated that the direct medical treatment costs of cancer in the United States for 2015 were $80.2 billion. In the United States in 2020, it is expected that in total there will be approximately 1.8 million new cancer cases diagnosed, which is the equivalent of approximately 4,950 new cases each day, according to the North American Association of Central Cancer Registries' (NAACCR) 2019 data. The incidence, deaths and economic loss caused by cancer are staggering. The following table published by The American Cancer Society shows estimated new cases and deaths in 2019 in the United States for selected major cancer types:

Cancer Type	Estimated New Cases	Estimated Deaths
Bladder	81,400	17,980
Breast (Female – Male)	276,480 – 2,620	42,170 – 520
Colon and Rectal (Combined)	147,950	53,200
Kidney (Renal Cell and Renal Pelvis)	73,750	14,830
Leukemia (All Type)	60,530	23,100
Liver and Intrahepatic Bile Duct	42,810	30,160
Lung (Including Bronchus)	228,820	135,720
Melanoma	100,350	6,850
Non-Hodgkin's Lymphoma	77,240	19,940
Pancreatic	57,600	47,050
Prostate	191,930	33,330
Thyroid	52,890	2,180

References

1. American Cancer Society: Cancer Facts and Figures 2020. Atlanta, GA: American Cancer Society, 2020. Also available online. Last accessed March 12, 2020.

United States and International Clinical Trials Market Overview

The United States is currently a world leader in biopharmaceutical research and development and manufacturing. In fiscal year 2020, the National Cancer Institute received a budget of $6.44 billion, an increase of $297 million over fiscal year 2019, to issue grants to support research, with a targeted investment in enhanced and early detection of disease through the analysis of circulating biomarkers using minimally invasive methods, as well as a focused investment in cancer prevention and treatment including research on new vaccines to prevent cancer-causing infections and investigational immuno-oncology drugs and drug combinations. The Pharmaceutical Research and Manufacturers 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, the overall cancer death rate in the United States has declined 27%, and approximately 83% of life expectancy increases in cancer patients are due to new treatments and oncology medications.

Outside of the United States, particularly in our targeted geographies of the Europe and Asia Pacific ("APAC") regions, growth in the pharmaceuticals and clinical trials market is continuing. Growth in the European pharma market is anticipated to be driven largely by the United Kingdom, Germany, Spain, France and Italy. The size of this market is expected to grow 25% between 2017 and 2022, and is expected to account for nearly 70% of the European pharma market by 2022. Germany is forecasted to have the highest increase in market value during this 5-year span. APAC's location provides access to large patient pools within favorable regulatory environments, and a strong intellectual property regime and available infrastructure. APAC accounts for about 19% of the global clinical trial share, and is expected to reach 30% in the next five years. CAGR for APAC CROs is over 20%, making it the fastest growing CRO market in the world.

While oncology drugs have the potential to be among the most personalized therapeutics, very few have successfully made it to market. 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 in 2020, one 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. We believe a growing demand for faster development of personalized medicines and more effective clinical trials are growth drivers of this market, and our core expertise is pharmacogenomics, or the study of genetic analysis based on a patient's response to a particular therapy or drug.

Our Strategy

Previously we were exclusively a molecular diagnostic company focused on delivering esoteric clinical tests to enable healthcare providers to better assess the risk of indeterminate biopsies progressing to cancer. The acquisition of the Biopharma business of Cancer Genetics, Inc. ("CGI") in July 2019 expanded our focus to include molecular and other diagnostic platform testing specialty services to the pharmaceutical and biotech industries.

Our primary goal is to become a leader in providing high quality and dependable personalized medicine with exceptional growth, Our strategy is to grow our business both organically as well as by selective partnering, which could potentially include licensing, acquisitions or mergers, to generate positive returns for our shareholders and driving towards cash flow break-even. We expect to not only continue to further develop our existing gastrointestinal and endocrine assays but to also expand our presence in other markets where we have expertise and access. Our existing customer base and broad-based capabilities provide us a unique window not only into our current customers' needs but also permit us to anticipate their future needs.

The key tactics to achieve our goals include:

- Expanding our existing commercial products, especially PancraGEN®, ThyGeNEXT® and ThyraMIR®, focusing on personalized medicine and early intervention related to cancer risk;

- Accelerating the clinical development and commercialization of BarreGEN®, our esophageal cancer risk classifier for Barrett's Esophagus, working with our recently developed Key Opinion Leaders ("KOL's") and expanding clinical studies to seek key reimbursement support while seeking partners to collaborate with us;
- Consolidating facilities and related costs including leveraging and updating our Laboratory Information Systems (LIM's) to provide timely and accurate lab information results;
- Broadening coverage and reimbursement for our clinical tests including:
    - Initiating and expanding studies to demonstrate that our tests are effective;
    - Meeting standards necessary to be consistent with leading clinical guidelines;
    - Executing by our internal managed care team;
    - Collaborating with KOL's; and
    - Establishing payer relationship and in-network contracts serving our diagnostic customers.
- Targeting synergistic product and service opportunities developed for our clinical customers for use by our pharmaceutical and biotech customers;
- Developing and commercializing other related first-line clinical assays and expanding our service offerings such as PanDNA®, a DNA only version of PancraGEN®, and markers for aggressive thyroid cancer;
- Expanding our commercial sales staff rationally, while supporting our products with high quality data and studies;
- Expanding our bioinformatics data collected (currently from over 60,000 patients), utilizing registries to improve our assays and leveraging our data with potential collaborators;
- Expanding internationally; and
- Expanding our average contract revenue from pharmaceutical and biotech customers by growing our services and product offerings while providing dependable and timely service and unique solutions.

The reliability of the volume growth from our clinical customers combined with more variable but scalable revenue from our pharmaceutical and biotech customers, we believe, provides the opportunity to expand our services and grow our business. We also believe that the synergistic opportunities of our businesses are important especially in targeted product categories where we have a history of clinical data and sample biorepositories as we expand our roster of pharmaceutical client opportunities. We also believe that our LIM's systems, with the current investments we are making, is already an important tool to support our future growth as we begin to convert data into usable and unique information and insights for our customers' benefit. Our unique commercial infrastructure focused on clinical and pharmaceutical customers is one of our most important assets and we anticipate expanding it in the future with highly trained commercial personnel that have growth potential and can effectively communicate our value proposition to our sophisticated customers. The information and analytics that we have, we believe, will help further differentiate us from our competitors.

Our Service Offerings

Our business is based on demand for molecular- and biomarker-based characterization of cancers from three main sectors: (1) physicians, hospitals and clinics, (2) biotechnology and pharmaceutical companies, and (3) 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 unique disease-focused or esoteric tests aim to provide actionable information that can guide patient management decisions, potentially resulting in decreased costs.

We continue to pursue the strategy of trying to demonstrate increased value and efficacy with payers who wish to contain costs and academic collaborators seeking to develop new insights and cures.

Our pharma services are sought by biotechnology and pharmaceutical companies engaged in designing and running clinical trials, from pre-clinical to post market surveillance, for their value and efficacy in oncology and immuno-oncology treatments and therapeutics.

We aim to provide physicians and patients with diagnostic options for detecting genomic and other molecular alterations that are associated with gastrointestinal, endocrine, and lung cancers. Our clinical services' customers consist primarily of physicians, hospitals and clinics.

Clinical services

Our clinical services develop and provide clinically useful molecular diagnostic tests and pathology and bioinformatics services. We develop and commercialize genomic tests and related first line assays principally focused on early detection of patients at high risk of cancer using the latest technology to help personalized medicine and improve patient diagnosis and management. Our tests and services provide mutational analysis of genomic material contained in suspicious cysts, nodules and lesions with the goal of better informing treatment decisions in patients at risk of thyroid, pancreatic, and other cancers. The molecular diagnostic tests we offer enable healthcare providers to better assess cancer risk, helping to avoid unnecessary surgical treatment in patients at low risk.

Our mission is to provide personalized medicine through genomics-based diagnostics and innovation to advance patient care based on rigorous science. Our laboratories are licensed pursuant to federal law under CLIA and are accredited by College of American Pathologists (CAP) and our products are approved by New York State. We are leveraging our licensed and accredited laboratories to develop and commercialize our assays and products. We aim to provide physicians and patients with diagnostic options for detecting genomic and other molecular alterations that are associated with gastrointestinal, endocrine, and other cancers. Our customers consist primarily of physicians, hospitals and clinics.

We currently have four commercialized molecular diagnostic tests in the marketplace: PancraGEN®, which is a pancreatic cyst and pancreaticobiliary solid lesion genomic test that helps physicians better assess risk of pancreaticobiliary cancers using our proprietary PathFinderTG® platform; ThyGeNEXT®, which is an expanded oncogenic mutation panel that helps identify malignant thyroid nodules; ThyraMIR®, which, in combination with ThyGeNEXT, assesses thyroid nodules for risk of malignancy utilizing a proprietary microRNA gene expression assay; and RespriDx®, which is a genomic test that helps physicians differentiate metastatic or recurrent lung cancer from the presence of newly formed primary lung cancer and which also utilizes our PathFinderTG® platform. We are gathering additional market data, performing clinical studies and working with our KOL's to further develop and progress with BarreGEN®, an esophageal cancer risk classifier for Barrett's Esophagus that also utilizes our PathFinderTG® platform.

Gastrointestinal Cancer Products

Our current gastrointestinal integrated pathology risk diagnostic assay, PancraGEN® is based on our PathFinderTG® platform, or PathFinderTG®. PathFinderTG® is designed to use advanced clinical algorithms to accurately stratify patients according to risk of pancreatic cancer by assessing panels of DNA abnormalities in patients who have pancreaticobiliary lesions (cysts or solid masses) with potential for cancer. PathFinderTG® is supported by our state of the art CLIA certified, and CAP accredited laboratory in Pittsburgh, Pennsylvania. Our Pittsburgh laboratory is our major clinical laboratory where we process the majority of our oncology related commercial tests; we also support our other gastrointestinal and endocrine commercial activities through this laboratory. Most of our development activities are initiated in our CLIA certified and CAP accredited laboratory in New Haven, CT.

Early detection of pancreatic cancer is crucial. As of March 2019, pancreatic cancer is the third leading cause of cancer deaths in the U.S. with an average 5 year survival rate of 9.3% according to The Centers for Disease Control and Prevention (the "CDC"s) SEER database. PancraGEN® is designed to determine risk of malignancy in pancreatic cysts and pancreaticobiliary solid lesions, which are more often than not benign lesions but have potential for cancer. We believe that PancraGEN® is the leader in the market for integrated molecular diagnostic tests for determining risk of pancreaticobiliary malignancy. We currently estimate that the immediate addressable market for PancraGEN® is approximately 130,000 indeterminate pancreaticobiliary lesions annually or approximately $350 million annually based on the current size of the patient population and reimbursement rates. To date, PancraGEN® has been used in about 40,000 clinical cases. The National Pancreatic Cyst Registry study published in*Endoscopy* in 2015 demonstrated that PancraGEN® more accurately determines the malignant potential of pancreatic cysts than international consensus 2012 imaging criteria, helping to ensure that surgery is reserved for the most appropriate patients. When molecular analysis is not performed, the vast majority of all pancreatic cysts surgeries are for those that do not harbor malignancy.

The American Gastroenterological Association 2015 Guidelines have cautioned that many pancreatic surgeries have been performed unnecessarily for lesions that will not progress to invasive adenocarcinoma. In addition, the 2016 guidelines published by the American Society of Gastroenterology Endoscopy (ASGE) in *Gastrointestinal Endoscopy* included a specific recommendation for use of molecular testing in specific circumstances where other types of testing and analysis have not provided sufficient data on which to determine the best course of action for patient treatment. Accordingly, we believe that PancraGEN® provides a highly reliable diagnostic and prognostic option that identifies cancer risk in circumstances where risk of cancer is otherwise uncertain.

We have also developed a cancer risk classifier assay, BarreGEN®, which is designed to evaluate patients with Barrett's esophagus, an upper gastrointestinal condition that can progress into esophageal cancer. BarreGEN®, which is also run on our PathFinderTG® platform, is distributed today on a limited basis through our CEP or Clinical Experience Program allowing us to gather additional data, perform clinical studies and seek initial reimbursement. We preliminarily estimate that the total Barrett's risk assessment market is approximately $0.7 to $1.3 billion annually based on the current size of the patient population and anticipated reimbursement rates. We are currently assessing the opportunity to partner BarreGEN®, while simultaneously working to gather sufficient data to gain insurance reimbursement for BarreGEN® in 2020.

Endocrine Cancer Products

We currently market and sell a dual platform endocrine cancer risk diagnostic assay. The incidence of thyroid nodules is on the rise. ThyGeNEXT® is a next generation DNA and RNA sequencing oncogene and mRNA fusion panel that is used to evaluate indeterminate thyroid biopsies. ThyGeNEXT ® works synergistically with our second endocrine cancer diagnostic test ThyraMIR®, which is based on measuring the relative expression of ten distinct microRNAs. The combination of ThyGeNEXT® and ThyraMIR® is designed to provide a highly sensitive "rule-in" and "rule-out" test to accurately risk stratify indeterminate thyroid nodules.

Our testing is performed in our state of the art Clinical Laboratory Improvement Amendments ("CLIA") certified; College of American Pathologists ("CAP") accredited laboratories in Pittsburgh, Pennsylvania and New Haven, Connecticut. CLIA is 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. Clinical laboratories must be certified under CLIA in order to perform testing on human specimens, unless they fall within an exception to CLIA certification, such as research laboratories that test human specimens but do not report patient-specific results for the diagnosis, prevention or treatment of any disease or impairment of, or the assessment of the health of individual patients. CLIA certification is also required to be eligible to bill Federal and State healthcare programs, as well as many private third-party payers, for diagnostic testing and services. In addition, proprietary tests must also be recognized as part of an accredited program under CLIA so that they can be offered in a CLIA-certified 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. Our pharma services laboratories have current certificates under CLIA to perform high complexity testing and our pharma services laboratories are accredited by CAP, one of seven CLIA-approved accreditation organizations. For renewal of CLIA certification, clinical laboratories are subject to survey and inspection every two years. Moreover, CLIA inspectors may make random inspections of clinical laboratories outside of the renewal process.

We estimate the total market for our endocrine cancer assays is approximately $300 million annually based on the current size of the patient population, estimated numbers of indeterminate biopsies and reimbursement rates. ThyGeNEXT® is used by some customers as a base line oncogene panel assessment and greater than 85% of such users will reflex to ThyraMIR® for a more specific evaluation.

Endocrinologists evaluate most thyroid nodules for possible cancer by collecting cells through Fine Needle Aspirants (FNA's) that are then analyzed by cytopathologists to determine whether or not a thyroid nodule is cancerous. While we have been previously validated for both FNA and slide biopsies, in 2018 we obtained multiple slide customers that were previously working with Rosetta Genomics Ltd., a molecular diagnostics company, prior to their bankruptcy. It is estimated that approximately 20% or well over 100,000 biopsies analyzed annually yield indeterminate results, meaning they cannot be diagnosed as definitely being malignant or benign by cytopathology alone. In the past, guidelines recommended that some patients with indeterminate cytopathology results undergo surgery to remove all or part of their thyroid to obtain an accurate diagnosis by looking directly at the thyroid tissue. According to a study published by Wang, et al. in 2011, in approximately 77% of these cases, the thyroid nodule proves to be benign.

Lung Cancer Product—RespriDx® Test and Metastatic versus Primary Platform

RespriDx® compares the mutational fingerprint of two or more sites of cancer to determine whether the neoplastic deposits are representative of a recurrence (metastasis) of lung cancer or a new primary or independent tumor. The test, which currently provides only nominal revenues, defines the presence or absence of cancer in atypical cytology by comparing the mutational profile with that of known previous cancer. RespriDx® assists in determining the most appropriate course of treatment, whether chemotherapy, surgery, or other modalities.

Pharma services

We provide data driven solutions for pharmaceutical and biotech companies engaged in clinical trials and we focus on providing these clients with oncology specific and non-oncology genetic testing services for phase I-IV clinical trials along with critical support of ancillary services. These ancillary services include: biorepository, clinical trial logistics, clinical trial design, bioinformatics analysis, customized assay development. DNA and RNA extraction and purification, genotyping, gene expression, flow cytometry, cytogenetic and FISH and biomarker analyses. We also seek to apply our expertise in laboratory developed tests to assist in developing and commercializing drug-specific companion diagnostics. We have established business relationships with key instrument manufacturers to provide a multi-omic approach, and to drive acceptance among biopharmaceutical sponsors developing innovative immuno-oncology therapies.

We also utilize our pharma services laboratories to provide clinical trial services to the pharmaceutical and biotech industries 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. We believe our pharma services operate one of only a few laboratories with the capability to combine somatic and germline mutational analyses in clinical trials.

Our pharma services operate through CLIA-certified and CAP-accredited laboratories located in Rutherford, NJ and Raleigh, NC.

Industry research has shown many promising drugs have produced disappointing results in clinical trials. For example, a 2016 article by the University of Michigan reported that only 1 in 50 cancer drug candidates make it to the clinical market. 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.

From a laboratory infrastructure standpoint, we possess capabilities in histology, immunohistochemistry (IHC), flow cytometry, cytogenetics and fluorescent in-situ hybridization (FISH), as well as sophisticated molecular analysis techniques, including next generation sequencing. This allows for comprehensive esoteric testing within one lab enterprise, with our CLIA-certified, CAP-accredited laboratory serving as a central hub for specimen tracking. Using this approach, we are able to support demanding clinical trial protocols requiring multiple assays and techniques aimed at capturing data on multiple biomarkers. Our suite of available testing platforms allows for highly customized clinical trial design which is supported by our dedicated group of development scientists and technical personnel.

Through this combination of a variety of testing platforms powered by a team of experienced scientists, we offer a comprehensive approach to clinical trial support. As trial design becomes increasingly complex to cater to more specific drug targets and patient populations, we believe that clinical result generation and reporting through a single-source solution for testing is becoming more valuable than ever. Examples of clinical trial services offered by our pharma services include:

Flow cytometry	Selection of individual antibodies in multiple myeloma, leukemia, lymphomas, and therapy response.
Karyotyping	Genome-wide detection of aberrations at low resolution that have a diagnostic or prognostic significance.

FISH	Probe library for the detection of gene abnormalities in chromosomes indicated in hematological and solid tumors.
Anatomic pathology	Full IHC library with over 180 antibodies available.
Exome sequencing	Sequencing of the protein-encoding genes in a genome.
DNA and RNA sequencing	Sequencing to determine the presence and quantity of RNA or DNA in a specimen.
Next Generation sequencing	Proprietary and custom-designed panels to deep sequence genomic material to identify substitutions, insertions and deletions, and rearrangements of genetic material.
Cell-free DNA analysis	Multi-gene next generation sequencing panel for lung cancer to detect tumor-derived cell-free DNA obtained from a blood draw.
DNA and RNA microarray	Measures expression levels of a large number of genes simultaneously.
Sanger sequencing	DNA sequencing for validation of next generation sequencing results, and for smaller scale sequencing projects.
Fragment size analysis	Analysis technique where DNA fragments are separated by size and used for mutation detection.
DNA and RNA extraction and purification	Extraction and isolation of DNA and RNA from a wide variety of sample types for immediate testing or for storage.
Biostatistics and Bioinformatics	Design and review of client assays and analysis of datasets.

In February of 2020, ClinicalTrials.gov reported over 40,000 clinical trials that are either preparing or recruiting patients. 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. We believe that 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. According to the FDA, 2019 produced over 48 new drug approvals and over 20% of these drugs were oncology-focused, highlighting the potential value of incorporating genomic information into oncology clinical trial design.

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.

Sales and Marketing

Our sales and marketing efforts consist of both direct and indirect sales channels with the majority of efforts focused on direct sales in the United States as well as a collaborative arrangement with another laboratory services company. In the US, pharma services also execute an indirect channel partner strategy by partnering with clinical research organizations ("CROs") to support demand for unique or esoteric testing, customized data management and individual development of unique biomarkers.

Our commercialization efforts for our clinical services are currently focused on endocrinology, gastroenterology and lung cancers. Communication of our marketing messaging and value proposition is done principally through our two field-based commercial sales teams of approximately 26 representatives and managers. In addition, we employ medical science liaisons or MSLs to respond to clinician inquiries. Additionally, we communicate through print, digital advertising, a web presence, peer-reviewed publications, and trade show exhibits. We believe that our molecular diagnostic tests provide value to payers, physicians and patients by improving patient care and lowering healthcare costs through avoidance of unnecessary surgeries, reducing the morbidity associated with unnecessary surgeries for patients, and providing better diagnostic and prognostic insights to physicians. We support the value propositions of our tests through rigorous science and the accumulation of bioinformatics data that demonstrate clinical and analytical validity as well as clinical utility, and how they actually impact physicians' decisions. We believe our repository of bioinformatics data accumulated in over 37,000 cases using PancraGEN and over 30,000 cases using our thyroid assays is a valuable tool in developing our analytics and potentially an even more valuable tool in the future.

We communicate to payers, integrated delivery systems and hospital systems about our molecular diagnostic tests' value through highly trained professionals who are experienced in reimbursement and business to business selling and through face to face meetings, phone calls, digital communications and advisory boards. We develop health economic analyses and budget impact models and incorporate these along with our clinical validation studies, and clinical utility studies to demonstrate our molecular diagnostic tests' value to this distinct and important constituency.

Our U.S. pharma services business development and sales professionals have scientific backgrounds in hematology, pathology, and laboratory services, with many years of experience in biopharmaceutical and clinical oncology sales, esoteric laboratory sales from leading biopharmaceutical, pharmaceutical or specialty reference laboratory companies. We currently have a team of 6 business development and sales professionals in the United States. We support our sales force with scientific experts who bring deep domain knowledge in the design and use of our technologies and services.

Our pharma services team also executes an indirect channel partner strategy. As a result of this strategy, the pharma services team conducts project support for sponsors as a partner of such central labs as Covance, ICON Laboratories Inc. and Parexel International Corp. In addition to both direct and indirect sales channels, the pharma services team has formed a partnership with the China-based lab partner Genecast Biotechnology Co., Ltd. or, Genecast. Through our partnership with Genecast, we believe we are able to support our global pharmaceutical and biotechnology clients with their testing needs in the Chinese market.

We also promote our tests and services through marketing channels commonly used by the biopharma and pharmaceutical industries, such as internet, industry 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. We do not, however, market our tests directly to individual patients or consumers.

Clinical Services Reimbursement Coverage

Additional Reimbursement Coverage During 2019

Reimbursement progress is key for our clinical services. We expanded the reimbursement of our products in 2019. Specifically, the most significant progress we have made regarding payers in 2019 and 2020 is as follows:

- In January 2019, we announced that we had entered into an agreement with the University of Maryland Medical System ("**UMMS**") to provide physicians' access to ThyGeNEXT®, ThyraMIR®, and PancraGEN® across the UMMS network, which includes 4,000 affiliated physicians who provide primary and specialty care in more than 150 locations and at 14 hospitals.

- In April 2019, we announced that Medica, one of the largest health plans in the Midwest, extended coverage of both ThyGeNEXT® and ThyraMIR® to its 1.3 million covered lives.

- In April 2019, we announced that we had received approval to launch ThyraMIR® diagnostic testing on formalin-fixed, paraffin-embedded tissue samples from thyroid nodules from the State of New York.

- In June 2019, we announced that our ThyGeNEXT® and ThyraMIR® tests are now covered by Independence Blue Cross ("Independence"), providing plan benefits coverage for its members who meet established medical criteria for the tests. Independence covers nearly 2.5 million members in Philadelphia and Southeastern Pennsylvania.

- In July 2019, we announced that we reached an agreement with SelectHealth (a plan associated with Intermountain Healthcare) ("SelectHealth") to provide ThyGeNEXT® and ThyraMIR® to SelectHealth's more than 850,000 members in Utah and Idaho.

- In July 2019, we announced we had entered into a contract with Blue Shield of California, making ThyGeNEXT® and ThyraMIR® tests in-network services for their 4 million lives.

- In July 2019, we announced that we contracted with Blue Cross Blue Shield of Michigan for coverage of our thyroid tests. The contract makes the ThyGeNEXT® and ThyraMIR® tests both covered services as well as in-network services for their total of approximately 6.1 million members.

- In September 2019, we announced that we contracted with Blue Cross and Blue Shield of Alabama, Arkansas and Arizona, making ThyGeNEXT ® and ThyraMIR® tests in-network services for nearly 5 million members.

- In December 2019, we announced the issuance of a draft local coverage determination (LCD) which indicated a potential increase in our Medicare reimbursement rate for ThyGeNEXT® from $597.91 to $2,919.60 per test (per the Centers for Medicare & Medicaid Services, or CMS, clinical lab fee schedule), reflecting the expansion of the ThyGeNEXT® panel to aid in identifying the appropriate patients for surgery.

Additional Reimbursement Coverage During 2020

- In February 2020, we announced an increase in Medicare reimbursement for our ThyraMIR® test from $1,800 to $3,000, retroactive to January 1, 2020, reflecting a re-evaluation of the technical and clinical performance of the test relative to other molecular tests in the market and their respective prices.

- In March 2020, we announced we had entered into a contract with Blue Cross Blue Shield of Massachusetts making ThyGeNEXT® and ThyraMIR® tests covered in-network services for their more than 3 million members in Massachusetts and across New England.

- In March 2020, we announced we had entered into a contract with CareFirst Blue Cross Blue Shield, making ThyGeNEXT® and ThyraMIR® tests covered in-network services for their more than 3.3 million members in Maryland, Washington, D.C., and Northern Virginia.

- In March 2020, we announced we had entered into a contract with Premera Blue Cross, making ThyGeNEXT® and ThyraMIR® tests covered in-network services for their more than 2 million members in Washington State and Alaska.

- In April 2020, we executed an agreement with Avalon Healthcare Solutions (Avalon), a laboratory benefit manager representing numerous health plans. Our agreement with Avalon offers us in-network status to approximately 5.8 million lives covered by the following health plans: Blue Cross Blue Shield North Carolina, South Carolina, Kansas City and Vermont, and Capital Blue Cross of Central Pennsylvania

- In April 2020, we executed a contract with Blue Cross of Idaho making ThyGeNEXT® and ThyraMIR® tests covered in-network services for their more than 576 thousand members.

Competition

We compete on the basis of factors such as reputation, scientific expertise, service quality, management experience, performance record, customer satisfaction, accessibility, flexibility, ability to respond to specific customer needs, integration skills, and product portfolio and price. Increased competition and/or a decrease in demand for our clinical and pharma services may also lead to other forms of competition. We believe that our business has a variety of competitive advantages that allow us to compete successfully in the marketplace. While we believe we compete effectively with respect to each of these factors, certain competitors of ours are substantially larger than us and have greater capital, personnel and other resources than we have. Many of our competitors also offer broader product lines outside of the molecular diagnostic testing market, and many have greater brand recognition than we do. Moreover, our competitors may make rapid technological developments that may result in our technologies and products becoming obsolete before we recover the expenses incurred to develop them or before they generate significant revenue. Increased competition may lead to pricing pressures and competitive practices that could have a material adverse effect on our market share and our ability to attract new business opportunities as well as our business, financial condition and results of operations.

We also compete with physicians and the medical community who use traditional methods to diagnose gastrointestinal and endocrine cancers. In many cases, practice guidelines in the United States have recommended therapies, surveillance or surgery to determine if a patient's condition is malignant or benign. As a result, we believe that we will need to continue to educate physicians and the medical community on the value and benefits of our molecular diagnostic tests in order to change clinical practices and continue to support the use of molecular diagnostic tests in clinical guidelines.

Specifically, in regard to our thyroid diagnostic tests, Veracyte, Inc., or Veracyte, has a molecular thyroid nodule cancer diagnostic test (Afirma) that is the current market leader and competes with our ThyGeNEXT® and ThyraMir® tests. Quest Diagnostics Incorporated, or Quest, currently offers a diagnostic test similar to the earlier version of our ThyGeNEXT® test and announced an agreement to distribute the Afirma test in partnership with Veracyte. CBLPath, Inc., or CBL, is offering a diagnostic test that analyzes genetic alterations using next-generation sequencing. In addition, other thyroid based endocrine competitors include Accelerate Diagnostics, Inc., or other companies we are not aware of. Additionally, in February 2020 we entered into an arrangement to co-market our thyroid test for an additional two years with LabCorp on a reference laboratory basis.

We are currently not aware of any direct competitors to PancraGEN® that integrate clinical, imaging, cytology, and molecular information to stratify patients' risk for malignancy and inform physicians on the best course of action, i.e. surgery or surveillance and surveillance interval length. The University of Pittsburgh Medical Center now offers PancreaSeq®, a Next Generation Sequencing "gene only" panel that focuses on the analysis of mutations in oncogenes and tumor suppressor genes, most of which may help establish the type of pancreatic cyst present and some of which may help establish the presence of malignancy. Some of these related genomic regions are included in PancraGEN®. This laboratory test however does not integrate any additional information to fully characterize a patient's risk for pancreatic cancer. Importantly, there has been no long-term clinical validation or utility studies completed on any gene panel for pancreatic cyst fluid other than that associated with PancraGEN®. PancraGEN® has been validated in multiple studies and peer reviewed publications and has been used in over 45,000 patients. Additionally, we validated and launched a DNA only version of PancraGEN®, known as PanDNA®.

It is also possible that we face future competition from other laboratory-developed tests (LDT's), developed by commercial laboratories such as Quest and other diagnostic companies developing new tests or technologies. Furthermore, we may be subject to competition as a result of new, unforeseen technologies that may be developed by our competitors in the gastrointestinal and endocrine cancer molecular diagnostic tests space.

We are aware of companies that are in the process of developing assays and LDTs for Barrett's esophagus, such as Cernostics Inc. In addition, NeoGenomics Laboratories, Inc., or NeoGenomics, is marketing a Barrett's assay, so it appears likely that this space will also be more competitive in the future.

With respect to pharma services, 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, and many private companies.

Research and Development

We conduct most of our research and development activities at our CLIA certified and CAP accredited laboratories in Pittsburgh, Pennsylvania and New Haven, Connecticut. Our research and development efforts primarily focus on providing data and analyses necessary to support and improve our existing products on the market. Additionally, our research and development activities provide product line extension of our existing products as well as new product opportunities utilizing our proprietary platforms and extensive bioinformatics repositories and data bases.

Also, we use reagents for cross site validations and validations of new assays to be used in clinical trials.We may enter into collaborative relationships with research and academic institutions for the development of additional or enhanced tests to further increase the depth and breadth of our test offerings. Where appropriate, we may also enter into licensing agreements with our collaborative partners to both license intellectual property for use in our test panels as well as licensing such intellectual property out.

Our research and development costs are primarily clinical costs and were approximately $2.8 million and $2.1 million in 2019 and 2018, respectively.

We continue to generate and publish clinical evidence related to our key products, including ThyGeNEXT® and ThyraMIR® and PancraGEN® as well as our pipeline product, BarreGEN®. Below is a summary of publications and presentations announced since the beginning of 2019:

- PancraGEN clinical utility data accepted as poster of distinction at Digestive Disease Week (DDW) 2020
- ThyGeNEXT and ThyraMIR clinical performance abstract accepted as poster at ENDO 2020
- ThyGeNEXT and ThyraMIR clinical performance publication accepted, announced March 2020
- ThyGeNEXT and ThyraMIR analytical validation published, March 2020
- BarreGEN expanded utility study in collaboration with the University of North Carolina, announced January 6, 2020
- ThyGeNEXT and ThyraMIR clinical utility data published, announced November 4, 2019
- ThyGeNEXT and ThyraMIR clinical utility review published, announced November 4, 2019
- PancraGEN clinical utility data presented at the American College of Gastroenterologists (ACG), announced October 24, 2019
- ThyGeNEXT and ThyraMIR clinical utility data presented at the American Thyroid Association (ATA), announced on October 29, 2019
- ThyGeNEXT and ThyraMIR clinical utility data orally presented at the World Congress of Thyroid Cancer announced June 13, 2019
- ThyGENX and ThyraMIR clinical utility data published, announced May 1, 2019
- BarreGEN clinical utility data presented at Digestive Disease Week (DDW), announced May 9, 2019
- BarreGEN® clinical utility data published, announced February 19, 2019

Clinical Evidence

- The first manuscript reporting the clinical performance of ThyGeNEXT® and ThyraMIR® tests was accepted in March 2020 in the Journal of the American Society of Cytopathology.
- Analytical Validation of ThyGeNEXT was accepted in the Journal of Molecular Diagnostics on November 18, 2019. This peer reviewed article detailed the development of our laboratory-developed ThyGeNEXT test, highlighting the key aspects of the test's reproducibility, lower limit of detection, as well as other fundamental quality parameters.
- A peer-reviewed manuscript was published in 2019 based on a 2018 clinical experience study that supports the use of BarreGEN® as an effective tool at identifying patients with Barrett's Esophagus at higher risk of progression to more advanced stages of disease associated with esophageal cancer, supporting the utility of BarreGEN® as an effective biomarker in identifying Barrett's patients in need of closer surveillance or cancer preventative measures. (Trindade AJ, et al. BMJ Open Gastro 2019;6:e000268. doi:10.1136/bmjgast-2018-000268).
- A peer-reviewed manuscript was published in 2018 describing the validity and utility of combination ThyGenX® and ThyraMIR® in microdissected stained cytology slides, providing physicians a useful alternative specimen type for combination molecular testing of indeterminate thyroid nodules. (Kumar G, et al. Diagnostic Cytopathology. 2018; 1-8. DOI: 10.1002/dc.24100).
- In 2018, data from a large clinical experience study of over 300 patients was presented at the 88th Annual Meeting of the American Thyroid Association (ATA) with conclusions highlighting the clinical utility of the ThyGenX® thyroid oncogene panel in combination with its micro-RNA classifier, ThyraMIR®. (Sistrunk JW, et al. American Thyroid Association 88th Annual meeting. 2018. Short Call Poster 42: https://doi.org/10.1089/thy.2018.29065.abstracts).
- In 2018, new data was published at the 88th Annual Meeting of the American Thyroid Association (ATA) describing the validity of combination ThyGeNEXT® and ThyraMIR® testing. (Kumar G, et al. American Thyroid Association 88th Annual meeting. 2018. Poster 86: https://doi.org/10.1089/thy.2018.29065.abstracts).
- A peer-reviewed manuscript was published in 2018 describing a large study of 478 patients with pancreatic cysts, which concluded that DNA analysis using PancraGEN® can have a favorable impact on patient outcomes particularly in patients with cysts that have worrisome features, supporting more accurate surgery and surveillance decisions in such clinical scenarios. (Farrell JJ, et al. GIE. 2018. doi.org/10.1016/j.gie.2018.10.049).
- A peer-reviewed manuscript was published in 2018 supporting the diagnostic accuracy and comparative diagnostic accuracy of PancraGEN® to gold standard cytology testing and gold standard molecular testing using FISH methods for diagnosing malignancy in solid pancreaticobiliary lesions. In this prospective study of 101 patients the authors found that PancraGEN® testing of specimens obtained during routine endoscopic procedures improved detection of pancreaticobiliary malignancy and improved diagnostic yield of each endoscopic procedure compared to use of gold standard testing alone. (Kushnir VM et al. J Clin Gastroenterol. 2018. doi: 10.1097/MCG.0000000000001118).
- A clinical experience study was published in 2018 describing the utilization, diagnostic accuracy, and comparative diagnostic accuracy and negative predictive value (including follow-up) of PancraGEN® compared to cytology testing for diagnosing malignancy in solid pancreaticobiliary lesions. The authors found that PancraGEN® improved detection of pancreaticobiliary malignancy and changed physician management decisions in a way that could improve patient outcomes. (Khosaravi F, et al. JOP. J Pancreas. 2018 Jan 29; 19(1):1-6).

Intellectual Property

Patents, trademarks and other proprietary rights are important to us. We generate our own intellectual property portfolio and hold numerous patents and patent applications covering our existing and future products and technologies. As of December 31, 2019, we owned six issued United States Patents. The U.S. patents are directed to methods of treating a patient that has pancreatic ductal adenocarcinoma (PDAC) using the expression pattern of certain microRNAs to identify the patient as having PDAC; treating the identified patient and to methods of measuring carcinoembryonic antigen in a biological sample; methods for treating subject with a high risk of disease progression from Barrett's metaplasia to esophageal adenocarcinoma; and methods of treating a subject identified with a papillary thyroid carcinoma. As of December 31, 2019, we owned eight issued patents outside of the United States, two each in Australia, Europe (validated in certain European countries), and Japan, and one each in Israel and Canada. As of December 31, 2019, we owned eleven pending patent applications in the United States and one pending patent application in each of Brazil, Canada, and Israel. Provided all maintenance fees and annuities are paid, our issued United States patents expire from 2031 through 2034 and our foreign patents expire in 2027 or 2031, and our pending patent applications, if issued, are expected to expire between 2027 and 2038, absent any disclaimers, adjustments or extensions. On March 29, 2017 we were notified by the European Patent Office that our EP patent # 2772550 for diagnosing thyroid cancer from a sample based upon at least MIR-375 was issued (validated in Spain, France, United Kingdom, Ireland, Italy, Belgium, Switzerland, Germany, and the Netherlands) and, provided all maintenance fees and annuities are paid, expires in 2031. On January 16, 2018, we were notified that an Opposition had been filed against EP patent # 2772550 alleging that the patent is invalid. On February 25, 2019, the European Patent Office Opposition Division issued a decision revoking the patent on grounds that the claims were not supported by a valid basis. On April 25, 2019 we filed a Notice of Appeal challenging the European Patent Office Opposition Division and we are waiting for the appeal to be decided. We continue to believe that the patent is valid. Our patents are directed to certain of the technologies relating to detecting, diagnosing, and classifying thyroid tumors, pancreatic cysts and other forms of gastrointestinal disorders, such as Barrett's esophagus.

On April 9, 2019 the United States Patent and Trademark Office (USPTO) issued U.S. Patent No. 10,255,410, supporting BarreGEN®. Additionally, United States Patent No. 10,444,239 issued on October 15, 2019, for methods measuring carcinoembryonic antigen in a biological sample.

In addition to our own molecular diagnostic test development efforts, we are currently using, and intend to use in the future, certain tests and biomarkers that have been developed by third parties or by us in collaboration with third parties. While a significant amount of intellectual property in the field of molecular diagnostic tests is already in the public domain, ThyraMIR®, ThyGeNEXT®, and some of the future tests developed by us, or by third parties on our behalf for use in our tests, may require, that we license the right to use certain intellectual property from third parties and pay customary royalties or make one time payments.

On August 13, 2014, we consummated an agreement to acquire certain fully developed thyroid and other tests in development for thyroid cancer, associated intellectual property and a biobank with more than 5,000 patient tissue samples pursuant to an asset purchase agreement, or the Asuragen Asset Purchase Agreement. We paid $8.0 million at closing and paid an additional $0.5 million to Asuragen for certain integral transition service obligations set forth in a transition services agreement, entered into concurrently with the Asuragen Asset Purchase Agreement. We also entered into two license agreements with Asuragen (the Asuragen License Agreement and the CPRIT License Agreement) relating to our ability to sell the fully developed diagnostic tests and other tests in development for thyroid cancer. Under the Asuragen License Agreement, we owed a $500,000 milestone payment, all of which was paid in installments throughout 2016 and paid in full as of January 13, 2017. We are further obligated to pay royalties on the future net sales of tests based on the miR*Inform*® pancreas platform, if developed, on the future net sales of tests based on the miR*Inform*® thyroid platform (i.e., ThyGeNEXT®) and potentially on certain other thyroid diagnostics tests. We rely on Asuragen as our sole supplier for certain components of our endocrine cancer diagnostic tests pursuant to our supply agreement with them.

In October 2014, we acquired RedPath Integrated Pathology Inc. (RedPath) which included its pancreatic and gastrointestinal assets. Additionally, we have a broad and growing trademark portfolio. We have secured trademark registrations for the marks AccuCEA® (or TM), PancraGEN®, PanDNA®, BarreGEN® and miR*Inform*® in the United States, and miR*Inform*® with the World Intellectual Property Organization. In July 2019, in connection with the acquisition of the BioPharma business of Cancer Genetics we acquired certain know-how.

Our clinical and our pharma services rely on a combination of trade secrets and proprietary processes to protect our intellectual property. We enter into non-disclosure agreements with certain vendors and suppliers to attempt to ensure the confidentiality of our intellectual property. We also enter into non-disclosure agreements with our customers. In addition, we require that all our employees sign confidentiality and intellectual property assignment agreements.

Raw Material and Suppliers

We procure reagents, equipment and other materials that we use to perform our tests from sole suppliers. We also purchase components used in our collection kits from sole-source suppliers. Some of these items are unique to these suppliers and vendors. Our most significant suppliers for reagents and supplies include Thermo Fisher Scientific, Illumina, Inc., Qiagen, Asuragen, and F. Hoffmann-La Roche AG. While we have developed alternate sourcing strategies for most of these materials and vendors, we cannot be certain whether these strategies will be effective or the alternative sources will be available when we need them. If these suppliers can no longer provide us with the materials we need to perform the tests and for our collection kits, if the materials do not meet our quality specifications or are otherwise unusable, if we cannot obtain acceptable substitute materials, or if we elect to change suppliers, an interruption in test processing could occur, we may not be able to deliver patient reports and we may incur higher one-time switching costs. Any such interruption may significantly affect our future revenue, cause us to incur higher costs, and harm our customer relationships and reputation. In addition, in order to mitigate these risks, we maintain inventories of these supplies at higher levels than would be the case if multiple sources of supply were available. If our test volume decreases or we switch suppliers, we may hold excess inventory with expiration dates that occur before use which would adversely affect our losses and cash flow position. As we introduce any new test, we may experience supply issues as we ramp test volume. During the first three months of Fiscal 2020, we acquired additional reagents beyond our normal purchasing patterns to minimize the possibility of supply chain disruptions for both our clinical and pharma services, however, there can be no guarantee that this will be sufficient.

Government Regulations and Industry Guidelines

The healthcare industry, and thus our business, is subject to extensive Federal, State, local and foreign regulation. Both Federal and State governmental agencies continue to subject the healthcare industry to intense regulatory scrutiny, including heightened civil and criminal enforcement efforts. We believe that we have structured our business operations and relationships with our customers to comply with applicable legal requirements. However, it is possible that governmental entities or other third parties could interpret these laws differently and assert otherwise. We discuss below the statutes and regulations that are most relevant to our business and most frequently cited in enforcement actions.

Regulations over Our Clinical Laboratories

The conduct and provision of our clinical services and pharma services are regulated under the Clinical Laboratory Improvements Act (“CLIA”). CLIA requires us to maintain Federal certification. CLIA imposes requirements relating to test processes, personnel qualifications, facilities and equipment, recordkeeping, quality assurance and participation in proficiency testing. CLIA compliance and certification are also a condition for participation by clinical laboratories in the Medicare Program and for eligibility to bill for services provided to governmental healthcare program beneficiaries. As a condition of CLIA certification, our laboratories are subject to survey and inspection every other year, in addition to being subject to additional random inspections. The biennial survey is conducted by CMS, a CMS agent (typically a State agency), or, if the laboratory is accredited, a CMS-approved accreditation organization. Sanctions for failure to meet these certification, accreditation and licensure requirements include suspension, revocation or limitation of a laboratory’s CLIA certification, accreditation or license, which is necessary to conduct business, cancellation or suspension of the laboratory’s ability to receive Medicare or Medicaid reimbursement, as well as imposition of plans to correct deficiencies, injunctive actions and civil monetary and criminal penalties. The loss or suspension of a CLIA certification, imposition of a fine or other penalties, or future changes in the CLIA law or regulations (or interpretation of the law or regulations) could harm our business. 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.

In addition to CLIA certification, we are required to hold state licenses in certain states. Some state licensing requirements differ from federal regulation and may be stricter. CLIA does not preempt state laws that are more stringent. If we were to lose our CLIA certification, CAP Accreditation, or required state licenses for our laboratories, whether as a result of revocation, suspension or limitation, we would no longer be able to provide our services, which could have a material adverse effect on our business, financial condition and results of operations.

Our laboratories are also subject to licensing and regulation under Federal, State and local laws relating to hazard communication and employee right-to-know regulations, and the safety and health of laboratory employees. Additionally, our laboratories are subject to applicable Federal and State laws and regulations and licensing requirements relating to the handling, storage and disposal of hazardous waste and laboratory specimens, including the regulations of the Environmental Protection Agency, the Department of Transportation, and the National Fire Protection Agency. The regulations of the United States Department of Transportation, Public Health Service and Postal Service apply to the surface and air transportation of laboratory specimens. Typically, we use outside vendors who are contractually obligated to comply with applicable laws and regulations to dispose of hazardous waste. These vendors are licensed or otherwise qualified to handle and dispose of such waste.

In addition to its comprehensive regulation of safety in the workplace, the United States Occupational Safety and Health Administration has established extensive requirements relating to workplace safety for healthcare employers whose workers may be exposed to blood-borne pathogens such as HIV and the hepatitis B virus, by preventing or minimizing any exposure through needle stick or similar penetrating injuries. Although we believe that we are currently in compliance in all material respects with such Federal, State and local laws, failure to comply with such laws could subject us to denial of the right to conduct business, fines, criminal penalties and other enforcement actions.

Potential U.S. Food and Drug Administration Regulation of Laboratory Developed Tests ("LDTs")

Both United States Federal and State governmental agencies continue to subject the healthcare industry to intense regulatory scrutiny, including heightened civil and criminal enforcement efforts. As indicated by work plans and reports issued by these agencies, the Federal government will continue to scrutinize, among other things, the marketing, labeling, promotion, manufacturing and export of LDTs. While subject to oversight by CMS through its enforcement of CLIA, the FDA has claimed regulatory authority over all laboratories that produce LDTs, a type of in vitro diagnostic test that is designed, manufactured and used within a single laboratory. The FDA has regulatory responsibility over, among other areas, instruments, test kits, reagents and other devices used in clinical laboratories to perform diagnostic testing in the United States.

The FDA has generally exercised enforcement discretion over all LDTs. However, in October 2014, the FDA issued two draft guidance documents: "Framework for Regulatory Oversight of Laboratory Developed Tests," which provided an overview of how the FDA would regulate LDTs through a risk-based approach, and "FDA Notification and Medical Device Reporting for Laboratory Developed Tests," which provided guidance on how the FDA intends to collect information on existing LDTs, including adverse event reports. Pursuant to the Framework for Regulatory Oversight draft guidance, LDT manufacturers would be subject to medical device registration, listing, and adverse event reporting requirements. LDT manufacturers would be required to either submit a pre-market application and receive the FDA's approval before an LDT may be marketed, or submit a pre-market notification in advance of marketing. The Framework for Regulatory Oversight draft guidance states that within six months after the guidance documents are finalized, all laboratories will be required to give notice to the FDA and provide basic information concerning the nature of the LDTs offered. If the FDA were to regulate LDTs as proposed under the 2014 draft guidance documents, then it would classify LDTs into one of three classes according to the current system used to regulate medical devices. Class I devices are those for which reasonable assurance of the safety and effectiveness can be provided by adherence to the FDA's general regulatory controls for medical devices. Class II devices are subject to the FDA's general controls, and any other special controls as deemed necessary by the FDA to provide reasonable assurance of the safety and effectiveness of the devices. Class III devices are those devices which are deemed by the FDA to pose the greatest risk, such as life-sustaining, life-supporting or implantable devices, have a new intended use, or use advanced technology that is not substantially equivalent to that of a legally marketed device. Under the guidance documents, LDTs would also be subject to significant post-market requirements as well.

On November 18, 2016, the FDA announced that it would not release the final guidance at this time and instead would continue to work with stakeholders, the new administration and Congress to determine the right approach. On January 13, 2017, the FDA released a discussion paper on LDTs outlining a possible risk-based approach for FDA and CMS oversight of LDTs. According to the 2017 discussion paper, previously marketed LDTs would not be expected to comply with most or all FDA oversight requirements (grandfathering), except for adverse event and malfunction reporting. In addition, certain new and significantly modified LDTs would not be expected to comply with pre-market review unless the agency determines certain tests could lead to patient harm. Since LDTs currently on the market would be grandfathered in, pre-market review of new and significantly modified LDTs could be phased-in over a four-year period, as opposed to the nine years proposed in the Framework for Regulatory Oversight draft guidance. In addition, tests introduced after the effective date, but before their phase-in date, could continue to be offered during pre-market review.

The discussion paper notes that FDA will focus on analytical and clinical validity as the basis for marketing authorization. The FDA anticipates laboratories that already conduct proper validation should not be expected to experience new costs for validating their tests to support marketing authorization and laboratories that conduct appropriate evaluations would not have to collect additional data to demonstrate analytical validity for FDA clearance or approval. The evidence of the analytical and clinical validity of all LDTs will be made publically available. LDTs are encouraged to submit prospective change protocols in their pre-market submission that outline specific types of anticipated changes, the procedures that will be followed to implement them and the criteria that will be met prior to implementation.

Despite the FDA decision to not release the guidance at this time, it can choose to regulate LDTs at any time. Failure to comply with applicable regulatory requirements could result in enforcement action by the FDA, such as fines, product suspensions, warning letters, recalls, injunctions and other civil and criminal sanctions. There are other regulatory and legislative proposals that would increase general FDA oversight of clinical laboratories and LDTs. The outcome and ultimate impact of such proposals on the business is difficult to predict at this time. We are monitoring developments and anticipate that our products will be able to comply with requirements if ultimately imposed by the FDA. In the meantime, we maintain our CLIA certification of accreditation, which permits the use of LDTs for diagnostics purposes.

In March 2017, a draft bill "The Diagnostics Accuracy and Innovation Act" (DAIA) was introduced in Congress. The bill sought to establish a new regulatory framework for the oversight of in vitro clinical tests ("IVCTs") which include LDTs. In 2020, Congress introduced "The Verifying Accurate, Leading-edge IVCT Development Act" (VALID) of 2020. Pursuant to it, a risk-based approach will be used to regulate IVCTs while grandfathering existing IVCTs. The new regulatory framework will include quality control and post-market reporting requirements. The FDA will have the authority to withdraw from the market IVCTs that present an unreasonable and substantial risk of severe illness or injury when used as intended.

Healthcare, Fraud, Abuse and Anti-Kickback Laws

The Anti-Kickback Statute makes it a felony for a person or entity, including a laboratory, to knowingly and willfully offer, pay, solicit or receive remuneration, directly or indirectly, in order to induce business that is reimbursable under any Federal healthcare program. A violation of the Anti-Kickback Statute may result in imprisonment of up to five years and fines of up to $250,000 for each offense in the case of individuals and $500,000 for each offense in the case of organizations. Convictions under the Anti-Kickback Statute result in mandatory exclusion from federal healthcare programs for a minimum of five years. In addition, HHS has the authority to impose civil assessments and fines and to exclude healthcare providers and others engaged in prohibited activities from Medicare, Medicaid and other federal healthcare programs. Actions, which violate the Anti-Kickback Statute, also incur liability under the Federal False Claims Act, discussed in more detail below, which prohibits knowingly presenting, or causing to be presented, a false or fraudulent claim for payment to the U.S. Government.

Although the Anti-Kickback Statute applies only to federal healthcare programs, a number of states have passed statutes substantially similar to the Anti-Kickback Statute, which prohibits similar conduct toward all other health plans and third-party payers. Federal and state law enforcement authorities scrutinize arrangements between healthcare providers and potential referral sources to ensure that the arrangements are not designed as a mechanism to induce patient care referrals or induce the purchase or prescribing of particular products or services. The law enforcement authorities, the courts and Congress have also demonstrated a willingness to look behind the formalities of a transaction to determine the underlying purpose of payments between healthcare providers and actual or potential referral sources. Generally, courts have taken a broad interpretation of the scope of the Anti-Kickback Statute, holding that the statute may be violated if merely one purpose of a payment arrangement is to induce referrals or purchases.

In addition to the requirements discussed above, several other healthcare fraud and abuse laws could have an effect on our business. For example, provisions of the Social Security Act permit Medicare and Medicaid to exclude an entity that charges the federal healthcare programs substantially in excess of its usual charges for its services. The terms "usual charge" and "substantially in excess" are ambiguous and subject to varying interpretations. Further, the Federal False Claims Act, discussed in more detail below, prohibits a person from knowingly submitting a claim, making a false record or statement in order to secure payment or retaining an overpayment by the federal government. In addition to actions initiated by the government itself, the statute authorizes actions to be brought on behalf of the federal government by a private party having knowledge of the alleged fraud. Because the complaint is initially filed under seal, the action may be pending for some time before the defendant is even aware of the action. If the government is ultimately successful in obtaining redress in the matter or if the plaintiff succeeds in obtaining redress without the government's involvement, then the plaintiff will receive a percentage of the recovery. Finally, the Social Security Act includes its own provisions that prohibit the filing of false claims or submitting false statements in order to obtain payment. Violation of these provisions may result in fines, imprisonment or both, and possible exclusion from Medicare or Medicaid programs.

We are also subject to the federal physician self-referral prohibitions, commonly known as the Stark Law, and state equivalents. These restrictions generally prohibit us from billing a patient or any governmental or private payer for any diagnostic services when the physician ordering the service, or any member of such physician's immediate family, has an investment interest in or compensation arrangement with us, unless the arrangement meets an exception to the prohibition.

Persons or entities found to violate the Stark Law are required to refund any payments received pursuant to a referral prohibited by these laws to the patient, the payer or the Medicare program, as applicable. Sanctions for a violation of the Stark Law include the following:

- denial of payment for the services provided in violation of the prohibition;
- refunds of amounts collected by an entity in violation of the Stark Law;
- a civil penalty of up to $15,000 for each service arising out of the prohibited referral;
- possible exclusion from federal healthcare programs, including Medicare and Medicaid; and
- a civil penalty of up to $100,000 against parties that enter into a scheme to circumvent the Stark Law's prohibition.

These prohibitions apply regardless of the reasons for the financial relationship and the referral. No finding of intent to violate the Stark Law is required for a violation. In addition, knowing violations of the Stark Law may also serve as the basis for liability under the Federal False Claims Act.

Additionally, the Federal Civil Monetary Penalties Law prohibits, among other things, the offering or transfer of remuneration to a Medicare or state healthcare program beneficiary if the person knows or should know it is likely to influence the beneficiary's selection of a particular provider, practitioner, or supplier of services reimbursable by Medicare or a state healthcare program, unless an exception applies.

We do retain healthcare practitioners as key opinion leaders providing consultation in various aspects of the business. These arrangements as any arrangement that includes compensation to a healthcare provider may trigger Federal or State anti-kickback and Stark Law liability. Our arrangements with healthcare providers are designed to meet available safe harbors and exceptions provided in the anti-kickback laws and Stark laws, respectively. There is no guarantee that the government will find that these arrangements are designed properly or that they do not trigger liability. Under existing laws, all arrangements must have a legitimate purpose and compensation must be fair market value. These terms require some subjective analysis and there is limited available case law or guidance for the application of these laws to the CLIA Laboratory industry. Safe harbors in the anti-kickback laws do not necessarily equate to exceptions in the Stark Law; and there is no guarantee that the government will not have issue with the relationships between the laboratories and the healthcare providers.

HIPAA, Fraud and Privacy Regulations

The Federal government's efforts to combat fraud in the healthcare setting were consolidated and strengthened under Public Law 104-191, the Health Insurance Portability and Accountability Act of 1996, or HIPAA. HIPAA established a comprehensive program to combat fraud committed against all health plans, both public and private by, among other things creating two new Federal offenses: healthcare fraud (18 U.S. Code § 1347) and false statements relating to healthcare matters (18 U.S. Code § 1035). These provisions prohibit: (1) the knowing and willful execution, or attempted execution, of a scheme or artifice (a) to defraud any healthcare benefit program (including private payers), or (b) to obtain, by means of false or fraudulent pretenses, representations, or promises, any of the money or property owned by, or under the custody or control of, any healthcare benefit program, in connection with the delivery of or payment for healthcare benefits, items, or services; and (2) the knowing and willful (a) falsification, concealment or covering up of a material fact by any trick, scheme or device, or (b) making of any materially false, fictitious or fraudulent statement or representation, or making or using any materially false writing or document knowing the same to contain any materially false, fictitious, or fraudulent statement or entry, in connection with the delivery of or payment for healthcare benefits, items or services. A violation of these provisions is a felony and may result in fines, imprisonment and/or exclusion from government-sponsored programs.

HIPAA, along with the Health Information Technology for Economic and Clinical Health Act and the various regulations promulgated thereunder, also establish uniform standards governing the conduct of certain electronic healthcare transactions and protecting the security and privacy of individually identifiable health information maintained or transmitted by healthcare providers, health plans and healthcare clearinghouses, which are referred to as "covered entities." The regulations promulgated under HIPAA govern: the Privacy of Individually Identifiable Health Information, restricting the use and disclosure of certain individually identifiable health information (45 C.F.R. §§ 164.500, et seq.); Administrative Requirements for electronic transactions, establishing standards for common healthcare transactions, such as claims information, plan eligibility, payment information and the use of electronic signatures (45 C.F.R. §§ 162.100, et seq.); Security Standards for the Protection of Electronic Protected Health Information, requiring covered entities to implement and maintain certain security measures to safeguard certain electronic health information (45 C.F.R. §§ 164.302, et seq.); and Breach Notification, requiring covered entities and their business associates to provide notification following a breach of unsecured protected health information (45 C.F.R. §§ 164.400, et seq.). As a covered entity, and also in our capacity as a business associate to certain of our customers, we are subject to these standards. While the government intended this legislation to reduce administrative expenses and burdens for the healthcare industry, our compliance with certain provisions of these standards entails significant costs for us, and our failure to comply could lead to enforcement action that could have an adverse effect on our business. If we or our operations are found to be in violation of HIPAA or its implementing regulations, we may be subject to potentially significant penalties, including civil and criminal penalties, damages and fines.

In addition to Federal regulations issued under HIPAA, many States and foreign jurisdictions have enacted privacy and security statutes or regulations that, in some cases, are more stringent than those issued under HIPAA. In those cases, it may be necessary to modify our planned operations and procedures to comply with the more stringent laws. If we fail to comply with applicable State laws and regulations, we could be subject to additional sanctions.

"Affordable Care Act"

In March 2010, President Obama signed into law the Patient Protection and Affordable Care Act, or PPACA (also known as the Affordable Care Act), as amended by the Health Care and Education Reconciliation Act, a sweeping law intended to broaden access to health insurance and coverage for patients, reduce or constrain the growth of healthcare spending, enhance remedies against fraud and abuse, add new transparency requirements for healthcare and health insurance industries, impose new taxes and fees on the health industry, coordinate and promote research on comparative clinical effectiveness of different technologies and procedures, and impose additional health policy reforms. PPACA, as well as other healthcare reform measures that have been and may be adopted in the future, may result in more rigorous coverage criteria, new payment methodologies and in additional downward pressure on pricing and implemented changes which significantly affect the pharmaceutical, medical device and clinical laboratory industries. The U.S. government, state legislatures and foreign governments have shown significant interest in implementing cost containment programs to limit the growth of government-paid health care costs. Under the current administration and Congress, there have been efforts to make additional legislative changes, including repeal and replacement of certain provisions of the PPACA. It is unclear what impact such legislative changes will have on the availability of healthcare and/or containing or lowering the costs of healthcare.

Third Party Coverage and Reimbursement for our Clinical Services

Our customers' bills are paid by many different payer groups. The majority of reimbursement dollars for traditional laboratory services are provided by traditional commercial insurance products, most notably preferred provider organizations, or PPOs, and other managed care plans, as well as government healthcare programs, such as Medicare and Medicaid. PPOs, HMOs and other managed care plans typically contract with a limited number of laboratories and then designate the laboratory or laboratories to be used for tests ordered by participating physicians. We are currently an out-of-network provider with most payers, which means we do not have a contract with payers to pay a specific rate for our tests. We did previously announce a new national agreement with Aetna through which the Company is now an in-network provider for Aetna's members. We are subject to applicable State laws regarding who should be billed, how they should be billed, how business should be conducted, and how patient obligations regarding cost sharing should be handled. In addition, if we become an "in-network" provider for certain payers in the future, we will also be subject to the terms of contracts (which could include reduced reimbursement rates) and may be subject to discipline, breach of contract actions, non-renewal or other contractually provided remedies for non-compliance with the contract's requirements and/or applicable laws.

We generally bill third-party payers and individual patients for testing services on a test-by-test basis. Third-party payers include Medicare, private insurance companies, institutional direct clients and Medicaid, each of which has different billing requirements. Medicare reimbursement programs are complex and often ambiguous, and are continuously being evaluated and modified by CMS. Our ability to receive timely reimbursements from third-party payers is dependent on our ability to submit accurate and complete billing statements, and/or correct and complete missing and incorrect billing information. Missing and incorrect information on reimbursement submissions slows down the billing process and increases the aging of accounts receivable. We must bill Medicare directly for tests performed for Medicare patients and must accept Medicare's fee schedule for the covered tests as payment in full. State Medicaid programs are generally prohibited from paying more than the Medicare fee schedule. We have contracted with a healthcare billing services management company to work with our in-house staff and help manage our third-party billing.

Some billing arrangements require us to bill multiple payers, and there are several other factors that complicate billing (e.g., disparity in coverage and information requirements among various payers; and incomplete or inaccurate billing information provided by ordering physicians). Since 2018 several private payers implemented pre-authorization requirements for molecular and genetic testing, including Anthem Blue Cross Blue Shield and United Healthcare, as well as various lab benefit companies such as American Imaging Management, Inc., or AIM, and Beacon Lab Benefits Solutions, or Beacon. In addition, more commercial payers are contracting with and delegating risk for lab services costs to lab benefits management companies (e.g. eviCore healthcare, AIM, and Beacon). This requires us to go through their technology assessment process to secure coverage and obtain a contract as an in-network lab provider for our services. We incur additional costs as a result of our participation in Medicare and Medicaid programs because diagnostic testing services are subject to complex, stringent and frequently ambiguous federal and state laws and regulations, including those relating to coverage, billing and reimbursement. Additionally, auditing for compliance with applicable laws and regulations as well as internal compliance policies and procedures adds further cost and complexity to the billing process. Further, our billing systems require significant technology investment and, as a result of marketplace demands, we need to continually invest in our billing systems. Changes in laws and regulations could further complicate our billing and increase our billing expense. CMS establishes procedures and continuously evaluates and implements changes to the reimbursement process and requirements for coverage.

As an integral part of our billing compliance program, we investigate reported failures or suspected failures to comply with Federal and State healthcare reimbursement requirements. Any Medicare or Medicaid overpayments are reimbursed by us. As a result of these efforts, we have periodically identified and reported overpayments, reimbursed the payers for overpayments and taken appropriate corrective action.

Historically, due to the nature of our business, we have performed requested testing and have reported test results regardless of collectability or form of reimbursement. We submit claims for reimbursement on a best efforts basis including the use of a third-party revenue cycle management firm. If at times the billing information is incorrect or incomplete, we subsequently attempt to contact the healthcare provider or patient to obtain any missing information and to rectify incorrect billing information. Missing or incorrect information on requisitions complicates and slows down the billing process and may also impact revenue recognition. The increased use of electronic ordering reduces the incidence of missing or incorrect information, and we are seeking to electronically integrate with more and more payers and clients. During 2017 we successfully implemented numerous electronic interfaces with providers to expedite the ordering and reporting process and increased the number of clients interacting with us via our customer portal.

There are a number of factors that influence coverage and reimbursement for molecular diagnostic tests. In the United States, the American Medical Association assigns specific CPT codes, which are necessary for reimbursement of molecular diagnostic tests. Once the CPT code is established, CMS establishes reimbursement payment levels and coverage rules under Medicaid and Medicare, and private payers establish rates and coverage rules independently. However, the availability of a CPT code is not a guarantee of coverage or adequate reimbursement levels, and the revenues generated from our tests will depend, in part, on the extent to which third-party payers provide coverage and establish adequate reimbursement levels.

United States and other government regulations governing coverage and reimbursement for molecular diagnostic testing may affect, directly or indirectly, the design of our tests and the potential market for their use. The availability of third-party reimbursement for our tests and services may be limited or uncertain. Third-party payers may deny coverage if they determine that the tests or service has not received appropriate FDA or other government regulatory clearances, is not used in accordance with cost-effective treatment methods as determined by the payer, or is deemed by the third-party payer to be experimental, unnecessary or inappropriate. Furthermore, third-party payers, including Federal and State healthcare programs, government authorities, private managed care providers, private health insurers and other organizations, frequently challenge the prices, medical necessity, and cost-effectiveness of healthcare products and services, including laboratory tests. Such payers may limit coverage of our tests to specific, limited circumstances, may not provide coverage at all, or may not provide adequate reimbursement rates, if covered. Further, one payer's determination to provide coverage does not assure that other payers will also provide coverage for the test. Adequate third-party reimbursement may not be available to enable us to maintain price levels sufficient to maintain our revenue and growth. Coverage policies and third-party reimbursement rates may change at any time.

Government payers, such as Medicare and Medicaid, have taken steps and are expected to continue to take steps to control the cost, utilization and delivery of healthcare services, including clinical test services. For example, Medicare has adopted policies under which it does not pay for many commonly ordered clinical tests unless the ordering physician has provided an appropriate diagnosis code supporting the medical necessity of the test. Physicians are required by law to provide diagnostic information when they order clinical tests for Medicare and Medicaid patients.

Currently, Medicare does not require the beneficiary to pay a co-payment for diagnostic information services reimbursed under the Clinical Laboratory Fee Schedule. Certain Medicaid programs require Medicaid recipients to pay co-payment amounts for diagnostic information services.

The Medicare Part B program contains fee schedule payment methodologies for clinical testing services performed for covered patients, including a national ceiling on the amount that carriers could pay under their local Medicare clinical testing fee schedules. Historically, the Medicare Clinical Laboratory Fee Schedule, or CLFS, has been subject to change. In April 2014, President Obama signed the Protecting Access to Medicare Act of 2014, or PAMA, which included a substantial new payment system for clinical laboratory tests under the CLFS. PAMA removed CMS's authority to adjust the CLFS based and established a new method for setting CLFS rates. Implementation of this new method for setting CLFS rates began in 2017. Under PAMA, laboratories that have more than $12,500 in Medicare revenues from laboratory services and that receive more than 50 percent of their Medicare revenues from laboratory services would report private payer data from January 1, 2016 through June 30, 2016, to CMS between January 1, 2017 and March 31, 2017. CMS posted the new Medicare CLFS rates (based on weighted median private payer rates) in November 2017 and the new rates became effective on January 1, 2018. The result of the PAMA calculations was an increase in our reimbursement rate for ThyGenX® of approximately 40% for our Medicare volume. However, on July 26, 2018, we received a coding update from CMS, which changed the billable procedure code (CPT) for ThyGeNEXT®. This code change resulted in a reduction of the fee schedule for payments to us. We have recently presented clinical data to CMS adding additional markers to the panel that we run that increase our gene families above 50. If approved, reimbursement for the new panel will exceed the previously approved rate. There can be no assurances that our request will be successful and that the rate will be escalated.

Any reductions to payment rates in the future resulting from the new methodology are limited to 10% per test per year in each of the years 2017 through 2019 and to 15% per test per year in each of the years 2020 through 2022. CMS has issued draft regulations regarding these changes. Further rule-making from CMS will define the time period and data elements evaluated on an annual basis to set reimbursement rates. Other than our chemistry testing services, our products are defined as Advanced Diagnostic Laboratory Tests (ADLTs) and therefore, we believe the pricing provisions of PAMA do not affect our marketed molecular diagnostic tests. The only testing for which we bill that is included in the CLFS is our carcinoembryonic antigen (CEA) and Amylase chemistry testing services. For these services, we provided CMS with the median pricing received from all payers in compliance with PAMA regulations.

In December 2019, through the Further Consolidated Appropriations Act of 2020, Congress delayed the next data reporting period under PAMA from 2020 to 2021 for final payments made between January 1 and June 30, 2019, extending the applicability of the payment rates based on 2017 reporting by one year through December 31, 2021.

Penalties for violations of laws relating to billing government healthcare programs and for violations of federal and state fraud and abuse laws include: (1) exclusion from participation in Medicare/Medicaid programs; (2) asset forfeitures; (3) civil and criminal fines and penalties; and (4) the loss of various licenses, certificates and authorizations necessary to operate our business. Civil monetary penalties for a wide range of violations may be assessed on a per violation basis. A parallel civil remedy under the federal False Claims Act provides for penalties on a per violation basis, plus damages of up to three times the amount claimed.

Historically, most Medicare and Medicaid beneficiaries were covered under the traditional Medicare and Medicaid programs administered by the federal government. Reimbursement from traditional Medicare and Medicaid programs represented approximately 38% of our consolidated net revenues during 2019. Over the last several years, the federal government has continued to expand its contracts with private health insurance plans for Medicare beneficiaries and has encouraged such beneficiaries to switch from the traditional programs to the private programs, called "Medicare Advantage" programs. There has been growth of health insurance providers offering Medicare Advantage programs and of beneficiary enrollment in these programs. Commercial health plans that might not cover one or all of our tests for their commercially insured members are required to follow the Novitas LCD coverage policy for their Medicare Advantage members. To the extent we maintain the LCD coverage policies with Novitas for our products, any shift of members from traditional Medicare to Medicare Advantage plans doesn't represent a risk of lost revenue. In recent years, in an effort to control costs, states also have mandated that Medicaid beneficiaries enroll in private managed care arrangements.

The current position of our laboratories is that they do not meet the definition of an "Applicable Manufacturer" under PPACA and therefore are not subject to the disclosure or tax requirements contained in PPACA. However, as new regulations are implemented and diagnostic tests reclassified, this may change and the laboratory business may be subject to PPACA as are other companies. There is no guarantee that our interpretation of the law is now or will be in the future consistent with government guidance and interpretation.

In December 2019, the our Medicare Administrative Contractor (MAC) issued a new draft local coverage determination (LCD) for our ThyGeNEXT® test, representing an increase of approximately $2,400 per assay over previous reimbursement coverage. This increase in reimbursement rates reflects the expansion of the ThyGeNEXT® panel to aid in identifying the appropriate patients for surgery. Final approval is expected during the first half of 2020. Additionally, in February 2020, the CMS modified the reimbursement for ThyraMIR® retroactively to January 1, 2020. This determination increases the Medicare reimbursement for ThyraMIR® from approximately $1,800 to $3,000 reflecting a re-evaluation of the technical and clinical performance of the test relative to other molecular tests in the market and their respective prices.

Reporting Segments

We operate under one segment which is the business of developing and selling diagnostic clinical and pharma services.

Employees

As of February 28, 2020, we had approximately 176 full time employees and 178 total employees. We are not party to a collective bargaining agreement with any labor union. However, due to the impacts of the COVID-19 pandemic, we have furloughed a significant number of employees as a result of reductions in customer demand.

Corporate Information

We were originally incorporated in New Jersey in 1986 and began commercial operations as PDI, Inc., a contract sales organization or CSO in 1987. In connection with PDI, Inc.'s initial public offering, it reincorporated in Delaware in 1998. In 2015 the CSO business and assets were sold, and we operated our molecular diagnostics business as Interpace Diagnostics Group, Inc. (IDXG). On July 15, 2019, we acquired the Biopharma Business from the secured creditors of CGI and Gentris, LLC, a wholly owned subsidiary of CGI and conduct our business as Interpace Pharma Solutions, Inc. We accordingly conduct our business through our wholly-owned subsidiaries, Interpace Diagnostics, LLC, which was formed in Delaware in 2013, Interpace Diagnostics Corporation (formerly known as RedPath Integrated Pathology, Inc.), which was formed in Delaware in 2007, and Interpace BioPharma, Inc., which was formed in Delaware in 2019. On November 12, 2019 we changed the name of Interpace Diagnostics Group, Inc. to Interpace Biosciences, Inc. and that of our newly-formed subsidiary, Interpace BioPharma, Inc. to Interpace Pharma Solutions, Inc. Our executive offices are located at Morris Corporate Center 1, Building C, 300 Interpace Parkway, Parsippany, New Jersey 07054. Our telephone number is (855) 776-6419.

Business Development

Biopharma Business Acquisition

On July 15, 2019, we entered into a Secured Creditor Asset Purchase Agreement (the "Asset Purchase Agreement") to acquire certain assets and liabilities from the secured creditors of Cancer Genetics, Inc., or CGI and Gentris, LLC, or Gentris, a wholly owned subsidiary of CGI, for approximately $23.5 million less certain closing adjustments totaling $1,978,240 (the "Base Purchase Price"), of which $7,692,300 was paid in the form of a promissory note issued by a subsidiary of the Company to CGI (the "Excess Consideration Note") and the remainder was paid in cash. In addition, we assumed certain liabilities totaling approximately $5 million. We acquired the Biopharma Business through a private foreclosure sale from CGI's secured creditors under § 9-610 of the Uniform Commercial Code as enacted in all relevant jurisdictions. Concurrently with the closing of the Asset Purchase Agreement, we entered into a financing arrangement with Ampersand 2018 Limited Partnership ("Ampersand"), a fund managed by Ampersand Capital Partners, pursuant to which Ampersand agreed to provide the below described financing to us in connection with the acquisition of the referenced Biopharma Business.

On July 15, 2019, we also entered into a transition services agreement with CGI to accommodate the transition of the Biopharma Business. Under the transition services agreement, each party is providing (or has provided) to the other party certain services, among other things, which include but are not limited to certain personnel services, payroll processing, administration services and benefit administration services, for the purpose of accommodating the transition of the Biopharma Business. In exchange for providing such services, we agreed to pay or reimburse, as applicable, the costs related thereto, including salaries and benefits for certain of CGI's Biopharma Business employees during the transition period. The transition service period varies with respect to each service provided in the agreement, and is subject to extension through a later date as mutually agreed upon by both parties. In connection with the acquisition, we added laboratory facilities in Rutherford, New Jersey and Raleigh, North Carolina and, as of January 1, 2020, we added 77 additional employees in connection with the acquisition.

Series A and A-1 Investment by Ampersand

On July 15, 2019, we entered into a Securities Purchase Agreement (the "Securities Purchase Agreement") with Ampersand pursuant to which we sold to Ampersand, in a private placement pursuant to Regulation D and Section 4(a)(2) under the Securities Act, up to an aggregate of $27,000,000 of Series A and Series A-1 convertible preferred stock, par value $0.01 per share, both at an issuance price per share of $100,000. The initial closing, which was consummated promptly after the execution of the Securities Purchase Agreement on July 15, 2019 (the "Initial Closing"), involved the issuance of 60 newly created shares of Series A Preferred Stock at an aggregate purchase price of $6,000,000, and 80 newly created shares of Series A-1 Preferred Stock at an aggregate purchase price of $8,000,000. The Securities Purchase Agreement also contemplated a second closing (the "Second Closing"), which was effected following the fulfillment of certain conditions, including, among others, the approval by the stockholders of the Company (the "Stockholder Approval"), as required under the rules of the Nasdaq Stock Market LLC (the "Nasdaq Listing Rules"), of the issuance of shares of common stock upon conversion of such Preferred Stock in excess of the aggregate number of shares of common stock that the Company could issue upon conversion of such Preferred Stock without breaching its obligations under the Nasdaq Listing Rules. The terms of the Series A-1 Preferred Stock provided that each share of such preferred stock would automatically convert into one share of Series A Preferred Stock upon the Company obtaining the Stockholder Approval. Furthermore, as a required condition of the Initial Closing, Ampersand designated and the Board appointed and elected a Class I Director.

On October 10, 2019, we obtained Stockholder Approval and each share of Series A-1 Preferred Stock issued to Ampersand at the Initial Closing automatically converted into one share of Series A Preferred Stock. On October 16, 2019, the Company and Ampersand consummated the Second Closing, where the Company issued to Ampersand 130 newly created shares of Series A Preferred Stock at an aggregate gross purchase price of $13,000,000. The Company used the proceeds from the Second Closing (i) to make the maturity date payment, subject to certain holdbacks, with respect to the Excess Consideration Note issued by a subsidiary of the Company to CGI, and (ii) for general corporate purposes, including the integration of pharma services. On October 17, 2019, after the Second Closing, Eric Lev was re-appointed to our Board as a Class I director by Ampersand, as the holder of 270 shares of Series A Preferred Stock, representing all of the shares of Series A outstanding after the Second Closing. Furthermore, as the holder of 270 shares of Series A Preferred Stock, Ampersand became entitled to elect a second and third director to our Board. On October 17, 2019, Ampersand designated and the Board appointed two Class II directors. In connection with the Second Closing, a cash payment of $6,024,489 was made to CGI under the Excess Consideration Note, net of setoffs and holdbacks. As of April 21, 2020, the Company is obligated to pay CGI an additional $735,000 for funds withheld from the Excess Consideration Note to satisfy certain adjustments and indemnification obligations under the Asset Purchase Agreement.

Series B Investment by 1315 Capital and Ampersand

On January 10, 2020, we entered into a Securities Purchase and Exchange Agreement (the "Securities Purchase and Exchange Agreement") with 1315 Capital II, L.P., a Delaware limited partnership ("1315 Capital"), and Ampersand (together with 1315 Capital, the "Investors") pursuant to which we sold to the Investors, in a private placement pursuant to Regulation D and Section 4(a)(2) under the Securities Act, an aggregate of $20,000,000 in Series B Preferred Stock, at an issuance price per share of $1,000. Pursuant to the Securities Purchase and Exchange Agreement, 1315 Capital purchased 19,000 shares of Series B Preferred Stock at an aggregate purchase price of $19,000,000 and Ampersand purchased 1,000 shares of Series B Preferred Stock at an aggregate purchase price of $1,000,000.

In addition, we exchanged $27,000,000 of the Company's existing Series A Preferred Stock held by Ampersand, represented by 270 shares of Series A Preferred Stock, which represented all of the Company's issued and outstanding Series A Preferred Stock, for 27,000 newly created shares of Series B Preferred Stock (such shares of Series B Preferred Stock, the "Exchange Shares" and such transaction, the "Exchange"). Following the Exchange, no shares of Series A Preferred Stock remain designated, authorized, issued or outstanding. Under the terms of the Securities Purchase and Exchange Agreement, Ampersand also agreed to waive all dividends and weighted-average anti-dilution adjustments accrued to date on the Series A Preferred Stock. Ampersand's director designation rights as holder of Series A Preferred Stock were also replaced following the Exchange with the following Series B Preferred Stock director designation rights.

For so long as each of Ampersand and 1315 Capital holds at least sixty percent (60%) of the Series B Preferred Stock issued to it on January 15, 2020, such Investor will be entitled to elect two directors to the Board, provided that one of the directors qualifies as an "independent director" under Rule 5605(a)(2) of the listing rules of the Nasdaq Stock Market (or any successor rule or similar rule promulgated by another exchange on which the Company's securities are then listed or designated) ("Independent Director"). However, if at any time such Investor holds less than sixty percent (60%), but at least forty percent (40%), of the Series B Preferred Stock issued to them on January 15, 2020, such Investor would only be entitled to elect one director to the Board. Any director elected pursuant to the terms of the Certificate of Designation may be removed without cause by, and only by, the affirmative vote of the holders of Series B Preferred Stock. A vacancy in any directorship filled by the holders of Series B Preferred Stock may be filled only by vote or written consent in lieu of a meeting of such holders of Series B Preferred Stock or by any remaining director or directors elected by such holders of Series B Preferred Stock.

Consistent with the director designation rights described above, the Board appointed and elected (a) one (1) Class I Director, as designated by Ampersand; and (b) three (3) Class II Directors, one of whom was designated by Ampersand and two by 1315 Capital. In connection with such appointments and elections as directors, two former directors resigned as directors and from all applicable committees of the Board. Moreover, under the terms of the Securities Purchase and Exchange Agreement, the Company agreed to use its reasonable best efforts to obtain the approval of the Company's stockholders at the 2020 annual meeting of the Company's stockholders (the "2020 Annual Meeting") of an amendment to the Company's certificate of incorporation, as amended, to eliminate the classified structure of the Board and to provide that all members of the Board stand for election at each annual meeting. Each Investor also agreed to vote in favor of the election of existing directors Jack Stover, Dr. Joseph Keegan and Stephen J. Sullivan to the Board at the 2020 Annual Meeting.

The Certificate of Designation of Preferences, Rights and Limitations of Series B Convertible Preferred Stock (the "Certificate of Designation") provides that each share of Series B Preferred Stock is convertible, at any time and from time to time, at the option of the holder into a number of shares of our common stock equal to dividing the amount equal to the greater of the stated value of $1,000 of such Series B Preferred Stock, plus any dividends declared but unpaid thereon, or such amount per share as would have been payable had each such share been converted into our common stock immediately prior to a liquidation, by sixty cents ($0.60) (as adjusted to $6.00 following effectuation of the Reverse Stock Split in January 2020 and subject to further adjustment in the event of any stock dividend, stock split, combination, or other similar recapitalization affecting such shares). The aggregate number of shares of our common stock that may be issued through conversion of the currently outstanding Series B Preferred Stock is 78,333,334 shares (as adjusted to 7,833,334 shares following effectuation of the Reverse Stock Split and subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares). On any matter presented to our stockholders for their action or consideration at any meeting of stockholders of the Company (or by written consent of stockholders in lieu of meeting), each holder of outstanding shares of Series B Preferred Stock will be entitled to cast the number of votes equal to the number of whole shares of our common stock into which the shares of Series B Preferred Stock held by such holder are convertible as of the record date for determining stockholders entitled to vote on such matter. Except as provided by law or by the Certificate of Designation, holders of Series B Preferred Stock will vote together with the holders of common stock as a single class and on an as-converted to common stock basis.

The Series B Preferred Stock entitles the holders thereof to certain protective provisions. In particular, for so long as any shares of Series B Preferred Stock are outstanding, the written consent of the holders of at least seventy five percent (75%) of the then outstanding shares of Series B Preferred Stock (voting as a single class) is required for us to amend, waive, alter or repeal the preferences, rights, privileges or powers of the holders of the Series B Preferred Stock, amend, alter or repeal any provision of the Certificate of Designation in a manner adverse to the holders of the Series B Preferred Stock, authorize, create or issue any equity securities senior to or pari passu with the Series B Preferred Stock, or increase or decrease the number of directors constituting the Board. Moreover, for so long as thirty percent (30%) of the Series B Preferred Stock outstanding as of January 15, 2020 remains outstanding (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares, including the Reverse Stock Split effected in January 2020), the written consent of the holders representing at least seventy-five percent (75%) of the of the outstanding shares of Series B Preferred Stock (voting as a single class) is required for us to: (A) authorize, create or issue any debt securities for borrowed money or funded debt (1) pursuant to which we issue shares, warrants or any other convertible security, or (2) in excess of $4,500,000.00 initially, with such amount to be increased in connection with an aggregate consolidated revenue milestone, but excluding certain specified permitted transactions; (B) merge with or acquire all or substantially all of the assets of one or more other companies or entities with a value in excess of $20,000,000.00, to be increased in connection with an aggregate consolidated revenue milestone; (C) materially change our business; (D) consummate any Liquidation (as defined in the Certificate of Designation); (E) transfer material intellectual property rights other than in the ordinary course of business; (F) declare or pay any cash dividend or make any cash distribution on any of our equity interests other than the Series B Preferred Stock; (G) repurchase or redeem any shares of our capital stock, except for the redemption of the Series B Preferred Stock pursuant to the terms of the Certificate of Designation, or repurchases of our common stock under agreements previously approved by the Board with employees, consultants, advisors or others who performed services for us in connection with the cessation of such employment or service; (H) incur any additional individual debt, indebtedness for borrowed money or other additional liabilities pursuant to we issue shares, warrants or any other convertible security, or incur any individual debt, indebtedness for borrowed money or other liabilities pursuant to which we do not issue shares, warrants or any other convertible security exceeding, in each case, $4,500,000.00 initially, with such amount to be increased in connection with an aggregate consolidated revenue milestone, but excluding certain specified permitted transactions; (I) change any of our accounting methods, except for those changes required by GAAP or applicable regulatory agencies or authorities; or (J) conduct a public offering of common stock registered with the SEC, including any at-the-market offering of our common stock.

During April 2020, the Company applied for various federal stimulus loans, grants and advances made available under Title 1 of the Coronavirus Aid, Relief, and Economic Security (CARES) Act, including a loan request under the Small Business Administration (SBA) Paycheck Protection Program (PPP). In connection with the Company's application for the PPP loan, both Ampersand and 1315 Capital consented to, and agreed to vote their shares of Series B Preferred Stock in favor of any "Fundamental Action" taken by the Company as determined by the Company's Board of Directors. "Fundamental Actions" include the Company's ability to a) authorize, create or issue any debt securities for borrowed money or funded debt; b) merge with or acquire all or substantially all of the assets of one or more other companies or entities with a value in excess of $20 million; c) transfer, by sale, exclusive license or otherwise, material intellectual property rights of the Company or any of its direct or indirect subsidiaries, other than those accomplished in the ordinary course of business; d) declare or pay any cash dividend or make any cash distribution on any equity interests of the Company other than the Series B Shares; d) incur any additional individual debt, indebtedness for borrowed money or other additional liabilities; and e) change any accounting methods or practices of the Company, except for those changes required by GAAP or applicable regulatory agencies or authorities.

Reverse Stock Split

At a Special Meeting of Stockholders held on December 13, 2019, our stockholders authorized our Board, in its discretion, to amend our certificate of incorporation, as amended, to effect a reverse split of our outstanding common stock at a ratio between one-for-five (1:5) and one-for-fifteen (1:15), with such final ratio to be determined by the Board following the special meeting (the "**Reverse Stock Split**"). On January 14, 2020, the Board determined to set the Reverse Stock Split ratio at one-for-ten (1:10) and approved the final form of the certificate of amendment to our certificate of incorporation to effectuate the Reverse Stock Split, which was filed with the Secretary of State of the State of Delaware on January 14, 2020. The Reverse Stock Split became effective in accordance with the terms of the certificate of amendment at 12:01a.m. Eastern Time on Wednesday, January 15, 2020, at which time every ten (10) shares of common stock issued and outstanding automatically combined into one (1) share of issued and outstanding common stock, without any change in the par value per share. Fractional shares were not issued as a result of the Reverse Stock Split. Instead, any fractional shares of our common stock that would have otherwise resulted from the Reverse Stock Split were rounded up to the nearest whole share.

The Reverse Stock Split resulted in a proportionate adjustment to the per share exercise price and the number of shares of common stock issuable upon the exercise of our outstanding stock options and warrants, as well as the number of shares of common stock eligible for issuance under the Interpace Biosciences, Inc. 2019 Equity Incentive Plan and the Interpace Biosciences, Inc. Employee Stock Purchase Plan.

Except as otherwise indicated, all share and per share information herein gives effect to the Reverse Stock Split.

Appointment of Chairman of the Board of Directors

On April 16, 2020, Robert Gorman was elected to serve as the Company's Chairman of the Board of Directors (the "Board") by the Nominating and Corporate Governance Committee of the Board. Mr. Gorman previously served in a consulting role for the Company under an agreement dated January 29, 2020; such consulting agreement is effectively terminated with his appointment as Chairman. Mr. Gorman shall serve as Chairman through the anniversary date of his appointment and continuing thereafter so long as he is elected as a member of the Board by the Company's shareholders.

Available Information

We maintain an internet website at www.interpace.com. Our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports are available free of charge through the "Investor Relations" portion of our website, as soon as reasonably practicable after they are filed with the SEC. The content contained in, or that can be accessed through, our website is not incorporated into this Form 10-K.

ITEM 1A. RISK FACTORS

In addition to the other information provided in this Annual Report on Form 10-K, including our financial statements and the related notes in Part II - Item 8, you should carefully consider the following factors in evaluating our business, operations and financial condition. Additional risks and uncertainties not presently known to us, which we currently deem immaterial or that are similar to those faced by other companies in our industry or businesses in general, such as competitive conditions, may also impair our business operations. The occurrence of any of the following risks could have a material adverse effect on our business, financial condition, results of operations or cash flows.

Risks Related to our Business

Adverse Impact of Coronavirus (COVID-19) Pandemic

The world is currently suffering a coronavirus (COVID-19) pandemic which is resulting in social distancing, travel bans and quarantines. Currently volume of testing in our clinical services labs has substantially slowed and we have furloughed a significant number of employees as a result of reductions in customer demand. Our pharma services customers have indicated that there could be a slowdown in clinical trials but thus far volume has not suffered. The extent to which the COVID-19 pandemic impacts our operations will depend on future developments, which are highly uncertain and cannot be predicted at this time, and include the duration, severity and scope of the outbreak and the actions taken to contain or treat the coronavirus outbreak. In particular, the continued spread of the coronavirus globally is adversely affecting global economies and financial markets resulting in an economic downturn which could materially and adversely impact our operations including, without limitation, the functioning of our laboratories, the availability of supplies including reagents, the progress and data collection of our pharma services, demand for our services and travel, customer demand and employee health and availability. Additionally, laying off or furloughing employees may result in our losing critical employees that we will need to replace when our business returns as expected. Not furloughing personnel before volume drops or if volume drops more than expected may mean that we are not able to reduce cost quickly enough to meet our plans or preserve cash. It appears likely that the COVID-19 pandemic will have an adverse impact on our revenue, results of operations and financial condition.

We have a history of operating losses, and our clinical and pharma services have generated limited revenue. We expect to incur net losses for the foreseeable future and may never achieve or sustain profitability.

For the year ended December 31, 2019, we had a net loss of $26.7 million and as of December 31, 2019, we had an accumulated deficit of $168.2 million. Although we expect our revenue to grow in the future, there can be no assurance that we will achieve revenue sufficient to offset expenses. Over the next several years, we expect to (i) continue to devote resources to increase adoption of, and reimbursement for, our clinical services tests and assays and to use our bioinformatics data to develop and enhance our clinical services products and services, (ii) leverage and invest in our pharma services to expand and enhance our pharma services and (iii) develop and acquire additional products and services. However, our business may never achieve or sustain profitability, and our failure to achieve and sustain profitability in the future could have a material adverse effect on our business, financial condition and results of operations, as well as cause the market price of our common stock to decline.

We have a limited operating history, which may make it difficult for you to evaluate the success of our business to date and to assess our future viability.

We began commercial sales of our molecular diagnostic tests in late 2014. On July 15, 2019, we acquired the Biopharma Business from the secured creditors of CGI and Gentris. We conduct our business through our wholly-owned subsidiaries, Interpace Diagnostics, LLC, which was formed in Delaware in 2013, Interpace Diagnostics Corporation (formerly known as RedPath Integrated Pathology, Inc.), which was formed in Delaware in 2007, and Interpace BioPharma, Inc., which was formed in Delaware in 2019. On November 12, 2019 we changed the name of Interpace Diagnostics Group, Inc. to Interpace Biosciences, Inc. and that of our newly-formed subsidiary, Interpace BioPharma, Inc. to Interpace Pharma Solutions, Inc. Consequently, any evaluations about our future success, performance or viability may not be as accurate as they could be if we had a longer operating history.

Our quarterly and annual revenues and operating results may vary which may cause the price of our common stock to fluctuate.

Our quarterly and annual operating results may vary as a result of a number of factors, including:

- uncertainty of cash collections which could impact or affect net realizable values of sales of our tests and services;
- inability of one or more of our laboratories to perform tests;
- progress or lack of progress in developing and commercializing tests and services;
- favorable or unfavorable decisions about our tests or services from government regulators, insurances companies, customers, or other their party payers;
- the commencement, delay, cancellation or completion of sales and marketing programs;
- timing and amount of expenses for implementing new programs and accuracy of estimates of resources required for ongoing programs;
- adoption of and coverage and reimbursement for our tests;
- changes in our relationships with key collaborators, suppliers, customers and third parties;
- fluctuations in net revenue due to changes in the valuation of our patient accounts;
- periodic stock-based compensation and awards;
- mark to market fluctuations in the valuation of our warrant liabilities;

- changes in valuation for contingent consideration related to acquired assets;
- fluctuations in R&D, business development and spending for clinical trials;
- timing and integration of any acquisitions; and
- changes in regulations related to diagnostics, pharmaceutical, biotechnology and healthcare companies.

We believe that quarterly, and in certain instances annual, comparisons of our financial results are not necessarily meaningful and should not be relied upon as an indication of future performance. Fluctuations in quarterly and annual results could materially and adversely affect the market price of our common stock in a manner unrelated to our long-term operating performance.

We depend on sales and reimbursements from our clinical services for more than 50% of our revenue, and we will need to generate sufficient revenue from these and other products and/or solutions that we develop or acquire to grow our business.

More than 50% of our revenue is derived from our clinical services. We have molecular diagnostics tests and complimentary service extensions that are in development, but there can be no assurance that we will be able to successfully commercialize or sufficiently grow those tests. If we are unable to increase sales of our molecular diagnostic tests, expand reimbursement for these tests, or successfully develop and commercialize other molecular diagnostic tests, our revenue and our ability to achieve and sustain profitability would be impaired, and this could have a material adverse effect on our business, financial condition and results of operations, and the market price of our common stock could decline.

We rely on third-parties to process and transmit claims to payers for our clinical services, and any delay in processing or transmitting could have an adverse effect on our revenue and financial condition.

We rely on third-parties to provide overall processing of claims and to transmit actual claims to payers based on specific payer billing formats. As of February 2019, we transitioned third party processors to handle all claim submissions and corresponding collections for our clinical services. We continue to rely on the original third party processor for the collection of those amounts billed through December 31, 2018. We believe the transition to the new third party processor resulted in lower cash collection rates in 2019. We estimate the lower collection rate resulted in a net revenue reduction of $5.2 million for 2019. With this transition to the new third-party processor, there can be no assurance that we will not experience additional interruptions or collection delays with our 2020 billings, an occurrence of which may adversely impact our revenue and financial condition. If claims for our clinical services are not submitted to payers on a timely basis, or if we are again required to switch to a different third-party processor to handle claim submissions, we may experience delays in our ability to process claims and receive payment from payers, which could have a material adverse effect on our business, financial condition and results of operations.

Due to how we recognize revenue, our quarterly revenue and operating results are likely to fluctuate.

We adopted Financial Accounting Standards Board ("FASB") ASU 2014-09, "Revenue from Contracts with Customers (Topic 606)" (or "ASC 606") effective January 1, 2018. As of this date, all revenue is recognized on the accrual basis, based upon actual collection histories for tests and services and respective payers or payer groups. Due to this change in accounting and the estimations required under ASC 606, our quarterly revenue and operating results are likely to fluctuate. As we recognize revenue from payers under ASC 606, we may subsequently determine that certain judgments underlying estimated reimbursement change, or that the estimates we used at the time we accrued such revenue vary materially from the actual reimbursements subsequently realized, and our financial results could be negatively impacted in future quarters. We experienced an adjustment in our estimate for variable consideration under ASC 606 during the fourth quarter of 2019 which resulted in a $5.2 million reduction in revenue recognized year to date.

As a result, comparing our operating results on a period-to-period basis may be difficult due to fluctuations resulting from the estimation process under ASC 606 and such comparisons may not be meaningful. You should not rely on our past results as an indication of our future performance. In addition, these fluctuations in revenue may make it difficult in the near term for us, research analysts and investors to accurately forecast our revenue and operating results. If our revenue or operating results fall below consensus expectations, the price of our common stock would likely decline.

A deterioration in the collectability of our accounts receivable could have a material adverse effect on our business, financial condition and results of operations.

Collection of accounts receivable from third-party payers and clients is critical to our operating performance. Our primary collection risks are (i) the risk of overestimating our net revenue at the time of billing, which may result in us receiving less than the recorded receivable, (ii) the risk of non-payment as a result of denied claims, (iii) in certain states, the risk that clients will fail to remit insurance payments to us when the commercial insurance company pays out-of-network claims directly to the client and (iv) resource and capacity constraints that may prevent us from handling the volume of billing and collection issues in a timely manner. Additionally, our ability to hire and retain experienced personnel affects our ability to bill and collect accounts in a timely manner. We routinely review accounts receivable balances in conjunction with these factors and other economic conditions that might ultimately affect the collectability of the client accounts and factor them into our estimation of collectability as warranted. Significant changes in business operations, payer mix or economic conditions, including changes resulting from legislation or other health reform efforts (including to repeal or significantly change the Affordable Care Act), could affect our collection of accounts receivable, cash flows and results of operations. In addition, increased client concentration in states that permit commercial insurance companies to pay out-of-network claims directly to the client instead of the provider, could adversely affect our collection of receivables. Unexpected changes in reimbursement rates by third-party payers could have a material adverse effect on our business, financial condition and results of operations.

Our inability to finance our business on acceptable terms in the future may limit our ability to develop and commercialize products and services and grow our business.

Our business is not currently operating on a cash flow breakeven or positive basis, and as a result, we may need to finance our business in the future through collaborations, equity offerings, debt financings, licensing arrangements or other dilutive or non-dilutive means. Additional funding may not be available to us on acceptable terms, or at all. If we raise funds by issuing additional equity securities, dilution to our stockholders could result. In other instances, the incurrence of additional indebtedness or the issuance of certain equity securities could result in increased fixed payment obligations and could also result in restrictive covenants, such as limitations on our ability to incur additional debt or issue additional equity, limitations on our ability to acquire or license intellectual property rights, limitations on our ability to enter into mergers or acquisition of assets, and other operating restrictions that could adversely affect our ability to conduct our business.

Our future inability to comply with financial covenants under our current line of credit facility and a future inability to comply with our debt obligations could result in our creditors declaring all amounts owed to them due and payable with immediate effect, or result in the collection of collateral by the creditor, both of which would have an adverse material impact on our business and our ability to continue operations

We entered into a Loan and Security Agreement (the "SVB Loan Agreement") with Silicon Valley Bank ("SVB"), providing for up to $4.0 million of debt financing consisting of a term loan (the "Term Loan") of up to $850,000 and a revolving line of credit based on our outstanding accounts receivable (the "Revolving Line") of up to $3.75 million. The Revolving Line and the Term Loan are both secured by a first priority lien on all our assets, except for intellectual property. We may not sell or encumber our intellectual property without SVB's prior written consent (a negative pledge).

The SVB Loan Agreement contains a number of affirmative and negative restrictive covenants that are applicable whether or not any amounts are outstanding under the SVB Loan Agreement. These restrictive covenants could adversely affect our ability to conduct our business, raise capital or sell or dispose of assets to raise capital. The SVB Loan Agreement also contains a number of customary events of default. A failure to comply with these restrictive covenants and/or repay any of our debt obligations could result in an event of default, which, if not cured or waived, could result in the Company being required to pay much higher costs associated with the indebtedness and/or enable our creditors to declare all amounts owed to them due and payable with immediate effect. If we are forced to refinance our debt on less favorable terms, our results of operations and financial condition could be adversely affected by increased costs and rates. We may also be forced to pursue one or more alternative strategies, such as restructuring, selling assets, reducing or delaying capital expenditures or seeking additional equity capital. There can be no assurances that any of these strategies could be implemented on satisfactory terms, if at all, or that future borrowings or equity financing would be available for the payment of any indebtedness we may have. In addition, in an event of default, our creditors could begin proceedings to sell the collateral securing the debt. This would have a material adverse effect on our ability to continue operations.

As of December 31, 2019, there was a $3.0 million balance owed on the Revolving Line and we were in violation of a financial covenant for the month of December for which we received a waiver from SVB. As of April 17, 2020, we had $3.4 million outstanding under the Revolving Line and we are in compliance with our financial covenants.

The impact of the COVID-19 pandemic could have a significant material negative impact on our operations, which in future periods could result in doubt of our ability to continue as a going concern.

We believe that the COVID-19 pandemic will adversely impact our results of operations, cash flows and financial condition for the first and second quarters of fiscal 2020 and possibly beyond. We continue to monitor the rapidly evolving situation and guidance from authorities, including federal, state and local public health authorities and may take additional actions based on their recommendations. In these dynamic circumstances, there may be developments outside our control requiring us to adjust our operating plan. Such developments in the COVID-19 pandemic in future periods, when assessed by us, could result in doubt of our ability to continue as a going concern.

Risks Related to our Preferred Stock

We have issued and may issue additional preferred stock in the future, and the terms of the preferred stock may reduce the value of our common stock.

We are authorized to issue up to five million shares of preferred stock in one or more series. Our Board may determine the terms of future preferred stock offerings without further action by our stockholders. If we issue additional preferred stock, it could affect stockholder rights or reduce the market value of our outstanding common stock. In particular, specific rights granted to future holders of preferred stock may include voting rights, preferences as to dividends and liquidation, conversion and redemption rights, sinking fund provisions, and restrictions on our ability to merge with or sell our assets to a third party. As of March 20, 2020, we have designated, issued and sold an aggregate of 47,000 outstanding shares of Series B Preferred Stock.

Two private equity firms and their affiliate's control, on an as-converted basis, an aggregate of 66% of our outstanding shares of common stock through their holdings of our Series B Preferred Stock, and this concentration of ownership along with their authority for designation rights for a majority of our directors will have a substantial influence on our decisions.

Ampersand holds 28,000 shares of our Series B Preferred Stock and 1315 Capital holds 19,000 shares of Series B Preferred Stock. Accordingly, as of March 20, 2020, on an as converted basis, Ampersand and its affiliates beneficially own 39.4% of the Company's outstanding common stock of 4,025,104 and 1315 Capital and its affiliates beneficially own 26.7%. The sale by such holders of one or more large blocks of our common stock could have a negative impact on the market price of our common stock.

These stockholders, acting together, have control 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. Holders of Series B Preferred Stock were granted director designation rights over a majority of our Board. Accordingly, these stockholders, acting together, have significant influence over our management and affairs. This concentration of ownership might harm the market price of our common stock by delaying, deterring or preventing a change in control, making make some transactions more difficult or impossible to complete without the support of these shareholders, regardless of the impact of this transaction on our other shareholders. Such ownership interests could effectively deter a third party from making an offer to buy us, which might involve a premium over our current stock price or other benefits for our stockholders, or otherwise prevent changes in the control or management. For example, this concentration of ownership may have the effect of 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.

The holders of our Series B Preferred Stock have preferential rights that may be adverse to holders of our common stock.

The holders of our Series B Preferred Stock have preferential rights with respect to distributions upon a liquidation of the Company, including certain business combinations deemed to be a liquidation. Accordingly, no distributions upon liquidation may be made to the holders of common stock until the holders of the Series B Preferred Stock have been paid their liquidation preference. As a result, it is possible that, on liquidation, all amounts available for the holders of equity of the Company would be paid to the holders of Series B Preferred Stock, and that the holders of common stock would not receive any payment. In addition, the holders of Series B Preferred Stock have the right to approve certain actions of the Company.

In April 2020, the holders of our Series B Preferred Stock consented to, and agreed to vote (by proxy or otherwise) their Series B Preferred Stock in favor of any "Fundamental Action" taken by the Company as determined by the Company's Board of Directors. "Fundamental Actions" include the Company's ability to a) authorize, create or issue any debt securities for borrowed money or funded debt; b) merge with or acquire all or substantially all of the assets of one or more other companies or entities with a value in excess of $20 million; c) transfer, by sale, exclusive license or otherwise, material intellectual property rights of the Company or any of its direct or indirect subsidiaries, other than those accomplished in the ordinary course of business; d) declare or pay any cash dividend or make any cash distribution on any equity interests of the Company other than the Series B Shares; d) incur any additional individual debt, indebtedness for borrowed money or other additional liabilities; and e) change any accounting methods or practices of the Company, except for those changes required by GAAP or applicable regulatory agencies or authorities.

Risks Related to our Clinical Services

Billing for our clinical services tests is complex, and we must dedicate substantial time and resources to the billing process to be paid for our clinical services tests.

Billing for clinical services is complex, time consuming and expensive. Depending on the billing arrangement and applicable law, we bill various payers, including Medicare, insurance companies and patients, all of which have different billing requirements. To the extent laws or contracts require us to bill patient co-payments or co-insurance, we must also comply with these requirements. We may also face increased risk in our collection efforts, including write-offs of doubtful accounts and long collection cycles, which could have a material adverse effect on our clinical services, results of operations and financial condition. Among others, the following factors make the billing process complex:

- differences between the list price for our molecular diagnostic tests and the reimbursement rates of payers;
- compliance with complex Federal and State regulations related to billing Medicare;
- disputes among payers as to which party is responsible for payment;
- differences in coverage among payers and the effect of patient co-payments or co-insurance;
- differences in information and billing requirements among payers;
- incorrect or missing billing information;
- the resources required to manage the billing and claims appeals process including those of our billing service providers;
- our inability to bill timely and accurate requisitions and process denials efficiently may result in delayed collections and reduced reimbursement rates; and
- the overall performance and effectiveness of our billing service providers.

As we grow and introduce new clinical services tests and other services, we will likely need to add new codes to our billing process as well as our financial reporting systems. Failure or delays in effecting these changes in external billing and internal systems and processes could negatively affect our revenue and cash flow from our clinical services. Additionally, our billing activities require us to implement compliance procedures and oversight, train and monitor our employees or contractors, challenge coverage and payment denials, assist patients in appealing claims, and undertake internal audits to evaluate compliance with applicable laws and regulations as well as internal compliance policies and procedures. Payers also conduct external audits to evaluate payments, which add further complexity to the billing process. These billing complexities, and the related uncertainty in obtaining payment for our diagnostic solutions, could negatively affect our revenue and cash flow, our ability to achieve profitability, and the consistency and comparability of our results of operations.

We depend on a few payers for a significant portion of our revenue for our clinical services, and if one or more significant payers stops providing reimbursement or decreases the amount of reimbursement for our tests, our revenue could decline.

Revenue for clinical services tests performed on patients covered by Medicare was approximately 44% of our revenue for the fiscal year ended December 31, 2019. The percentage of our revenue derived from significant payers for our clinical services tests is expected to fluctuate from period to period as our revenue increases, as additional payers provide reimbursement for such tests, and in the event that one or more payers were to stop reimbursing for our clinical services tests or change their reimbursement amounts.

Novitas Solutions has been and is the current regional MAC that handles claims processing for Medicare services with jurisdiction for PancraGEN®, ThyGeNEXT®, ThyraMIR®, and RespriDx®. On a five-year rotational basis, Medicare requests bids for its regional MAC services. Any future changes in the MAC processing or coding for Medicare claims for our molecular diagnostic tests could result in a change in the coverage or reimbursement rates for such molecular diagnostic tests, or the loss of coverage.

Our PancraGEN®, ThyraMIR® and ThyGeNEXT® tests are reimbursed by Medicare based on applicable CPT codes. RespriDx® is currently only covered by the Medicare Advantage program and our BarreGEN® assay is not reimbursed at all. Any future reductions from the current reimbursement rates for our clinical services tests would have a material adverse effect on business and results of operations.

Although we have entered into contracts with certain third-party payers which establish allowable rates of reimbursement for our clinical services tests, payers may suspend or discontinue reimbursement at any time, may require or increase co-payments from patients, or may reduce the reimbursement rates paid to us. Any such actions could have a negative effect on our revenue for our clinical services tests.

If payers do not provide reimbursement, rescind or modify their reimbursement policies or delay payments for clinical services, or if we are unable to successfully negotiate additional reimbursement contracts for our clinical services tests, our commercial success could be compromised.

Physicians may generally not order our clinical services tests unless payers reimburse a substantial portion of the test price. There is uncertainty concerning third-party reimbursement of any test incorporating new molecular diagnostic technology. Reimbursement by a payer may depend on a number of factors, including a payer's determination that tests such as our molecular diagnostic tests are: (a) not experimental or investigational; (b) pre-authorized and appropriate for the patient; (c) cost-effective; (d) supported by peer-reviewed publications; and (e) included in clinical practice guidelines. Since each payer generally makes its own decision as to whether to establish a policy or enter into a contract to reimburse our clinical services tests, seeking these approvals is a time-consuming and costly process. Although we have contracted rates of reimbursement with certain payers, which establishes allowable rates of reimbursement for our PancraGEN®, ThyGeNEXT®, ThyraMIR® and RespriDx® assays, payers may suspend or discontinue reimbursement at any time, may require or increase co-payments from patients, may impose pre-authorization requirements or may reduce the reimbursement rates paid to us. Any such actions could have a negative effect on our revenue for our clinical services tests.

We have contracted rates of reimbursement with select payers for PancraGEN®, ThyGeNEXT® and ThyraMIR® and to a limited extent, RespriDx®. Without a contracted rate for reimbursement, claims may be denied upon submission, and we may need to appeal the claims. The appeals process is time consuming and expensive, and may not result in payment. We expect to continue to focus resources on increasing adoption of and coverage and reimbursement for our molecular diagnostic tests. We cannot, however, predict whether, under what circumstances, or at what payment levels payers will reimburse us for our molecular diagnostic tests, if at all. In addition to our current commercial products on the market and in our pipeline, the launch of any new molecular diagnostic tests in the future may require that we expend substantial time and resources in order to obtain and retain reimbursement. Also, payer consolidation can create uncertainty as to whether coverage and contracts with existing payers will even remain in effect. Finally, commercial payers may tie their allowable rates to Medicare rates, and should Medicare reduce their rates, we may be negatively impacted. If we fail to establish broad adoption of and reimbursement for our assays, or if we are unable to maintain existing reimbursement from payers, our ability to generate revenue for our clinical services tests could be harmed and this could have a material adverse effect on our business, financial condition and results of operations.

We may experience a reduction in revenue if physicians decide not to order our clinical services tests.

If we are unable to create or maintain sufficient demand for our clinical services tests or if we are unable to expand our product offerings, we may not become profitable. To generate demand, we will need to continue to educate physicians and the medical community on the value and benefits of our clinical services tests in order to change clinical practices through clinical trials, published papers, presentations at scientific conferences and one-on-one education by our commercial sales force, which are costly and time-consuming. In addition, our ability to obtain and maintain adequate reimbursement from third-party payers for our clinical services tests will be critical to generating revenue.

In many cases, practice guidelines in the United States have recommended therapies or surgery to determine if a patient's condition is malignant or benign. Accordingly, physicians may be reluctant to order a diagnostic test that may suggest surgery is unnecessary. In addition, our assays are performed at our laboratories rather than by a pathologist in a local laboratory, so pathologists may be reluctant to support our tests. Moreover, guidelines for the diagnosis and treatment of thyroid nodules may change to recommend another type of treatment protocol, and these changes may result in medical practitioners deciding not to use our molecular diagnostic tests. These facts may make physicians reluctant to use our assays, which could limit our ability to generate revenue from our clinical services tests and achieve profitability, which could have a material adverse effect on our business, financial condition and results of operations.

We may experience a reduction in revenue if patients decide not to use our clinical services tests.

Some patients may decide not to use our clinical services tests due to price, all or part of which may be payable directly by the patient if the patient's insurer denies reimbursement in full or in part. Many insurers seek to shift more of the cost of healthcare to patients in the form of higher deductibles, co-payments, or premiums. In addition, the economic environment in the United States may result in the loss of healthcare coverage. Implementation of provisions of PPACA provided coverage for patients, particularly in the individual market, who were previously either uninsured or faced high premiums. However, premiums for many of the plans participating in the exchanges established as part of this legislation have increased and some health plans have chosen to drop out of these networks in specific markets or the program altogether. In addition, President Trump has announced that he favors repealing PPACA. In 2018, Congress passed legislation revising certain provisions of PPACA and federal agencies also have issued final rules to repeal or revise regulations governing the implementation of certain provisions of PPACA which may negatively impact our revenues. Also in 2018, in *Texas v. U.S.,* states and individual plaintiffs sued the federal government seeking to have the PPACA struck down. The trial court held that the provision related to individual coverage requirements or the individual mandate was unconstitutional. In December 2019, the U.S. Court of Appeals for the 5th Circuit affirmed the trial court's decision and sent the case back to the trial court. In the interim, parties supporting the PPACA sought expedited review by the U.S. Supreme Court; however, the Court did not expedite the case, and it remains unknown whether it will consider the case in its next term in the fall of 2020. Overall, the scope and timing of any further legislation, judicial action or federal regulations to limit, revise, or replace PPACA or regulations governing its implementation is uncertain, but if enacted could have a significant impact on the U.S. healthcare system and our revenues. These events may result in an increase of uninsured patients, increases in premiums, and reductions in coverage for some patients. Patients may therefore delay or forego medical checkups or treatment due to their inability to pay for our clinical services tests, which could have a negative effect on our revenues. We do have a Patient Assistance Program that allows eligible patients to apply for assistance in covering a portion of their out of pocket obligation or all costs for claims denied as non-covered for our clinical services tests if they meet the criteria for participation.

If our clinical services tests do not perform as expected, we may not be able to achieve widespread market adoption among physicians, which would cause our operating results, reputation, and business to suffer.

Our success depends on the market's confidence that we can provide reliable, high-quality molecular information products. There is no guarantee that the accuracy and reproducibility we have demonstrated to date will continue, particularly for clinical samples, as our test volume increases. We believe that our customers are likely to be particularly sensitive to product defects and errors, including if our products fail to detect genomic alterations with high accuracy from clinical specimens or if we fail to list, or inaccurately include, certain treatment options and available clinical trials in our product reports. As a result, the failure of our products to perform as expected would significantly impair our operating results and our reputation. We may be subject to legal claims arising from any defects or errors in our clinical services tests.

Our profitability will be impaired by our obligations to make royalty and milestone payments to our licensors for our clinical services tests.

In connection with our acquisition of certain assets of Asuragen in 2014, we currently license certain patents and know-how from Asuragen relating to (i) miR*Inform*® thyroid and pancreas cancer diagnostic tests and other tests in development for thyroid cancer (the "Asuragen License Agreement"), and (ii) the sale of diagnostic devices and the performance of certain services relating to thyroid cancer (the "CPRIT License Agreement"). Pursuant to the Asuragen License Agreement and the CPRIT License Agreement, we are obligated to make certain royalty and milestone payments to Asuragen and the Cancer Prevention & Research Institute of Texas, or CPRIT. Under the Asuragen License Agreement, we are obligated to pay royalties on the future net sales of tests utilizing the miR*Inform*® thyroid platform (i.e. ThyGeNEXT®), potentially on certain other thyroid diagnostics tests and potentially on other tests in development for thyroid cancer. A similar obligation exists if we elect to launch any molecular tests utilizing the miR*Inform*® pancreas platform. We are also required by the CPRIT License Agreement with Asuragen to make certain related royalty payments to CPRIT. We have been in discussions with CPRIT regarding royalty payments and no assurances can be given as to whether we owe such royalties and the amount thereof.

When performing the ThyraMIR® test, we use products supplied by Exiqon A/S (now a part of Qiagen), subject to a license agreement with Exiqon A/S. The license agreement obligates us to pay royalties on the future net sales of our assays that utilize licensed patents and know-how obtained from Exiqon A/S. Our profitability will be impaired by our obligations to make royalty payments to our licensors. Although we believe, under such circumstances, that the increase in revenue will exceed the corresponding royalty payments, our obligations to our licensors could have a material adverse effect on our business, financial condition and results of operations if we are unable to manage our operating costs and expenses at profitable levels.

If we breach certain agreements with Asuragen, it could have a material adverse effect on our sales and commercialization efforts for our thyroid cancer diagnostic tests as well as any potential tests in development for thyroid cancer utilizing their technology and the sale of diagnostic devices and the performance of certain services relating to thyroid cancer.

Under the CPRIT License Agreement, we are obligated to pay 5% of net sales on sales of certain diagnostic devices and the performance of services relating to thyroid cancer that incorporate technology developed and funded under an agreement between Asuragen and the Cancer Prevention and Research Institute of Texas, subject to a maximum deduction of 3.5% for royalties paid to third parties. Both of the Asuragen License Agreement and the CPRIT License Agreement continue until terminated by (i) mutual agreement of the parties or (ii) either party in the event of a material breach of the respective agreement by the other party. We have been in discussions with CPRIT and no assurances can be given as to whether we owe such royalties and the amount thereof.

If we materially breach or fail to perform any provision under the CPRIT License Agreement, Asuragen will have the right to terminate our license from CPRIT, and upon the effective date of such termination, our right to practice the licensed technology would end. To the extent such licensed technology rights relate to our molecular diagnostic tests currently on the market, we would expect to exercise all rights and remedies available to us, including attempting to cure any breach by us, and otherwise seek to preserve our rights under the technology licensed to us, but we may not be able to do so in a timely manner, at an acceptable cost to us or at all. Any uncured, material breach under these license agreements could result in our loss of rights to practice the technology licensed to us under these license agreements, and to the extent such rights and other technology relate to our molecular diagnostic tests currently on the market, it could have a material adverse effect on our sales and commercialization efforts for NGS-based thyroid and pancreatic cancer molecular diagnostic tests and other tests in development for thyroid cancer, and the sale of molecular diagnostic tests and the performance of certain services relating to thyroid cancer.

Under the agreement, neither party will be held responsible for a default or breach for failure or delay in performing its obligations when such failure or delay is caused by or results from events beyond reasonable control of the non-performing party, including fires, floods, earthquakes, hurricanes, embargoes, shortages, epidemics or pandemics, quarantines war, acts of war, etc.

Clinical utility studies are important in demonstrating to both customers and payers a molecular diagnostic test's clinical relevance and value. If we are unable to identify collaborators willing to work with us to conduct clinical utility studies, or the results of those studies do not demonstrate that a molecular diagnostic test provides clinically meaningful information and value, commercial adoption of such test may be slow, which would negatively impact our business.

Clinical utility studies show when and how to use a molecular diagnostic clinical test and describe the particular clinical situations or settings in which it can be applied and the expected results. Clinical utility studies also show the impact of the molecular diagnostic test results on patient care and management. Clinical utility studies are typically performed with collaborating oncologists or other physicians at medical centers and hospitals, analogous to a clinical trial, and generally result in peer-reviewed publications. Sales and marketing representatives use these publications to demonstrate to customers how to use a molecular diagnostic clinical test, as well as why they should use it. These publications are also used with payers to obtain coverage for a molecular diagnostic test, helping to assure there is appropriate reimbursement. We will need to conduct additional studies for our molecular diagnostic tests and other diagnostic tests we plan to introduce, to increase the market adoption and obtain coverage and adequate reimbursement. Should we not be able to perform these studies, should the costs or length of time required for these studies exceed their value, or should their results not provide clinically meaningful data and value for oncologists and other physicians, adoption of our molecular diagnostic tests could be impaired, and we may not be able to obtain coverage and adequate reimbursement for them.

We rely on sole suppliers for some of the materials used in our tests and services, and we may not be able to find replacements or transition to alternative suppliers in a timely manner.

We rely on sole suppliers for certain materials that we use to perform our tests and services, including Asuragen, for our endocrine cancer diagnostic tests pursuant to our supply agreement with them. We also purchase reagents used in our tests and services from sole-source suppliers. While we have developed alternate sourcing strategies for these materials and vendors, we cannot be certain whether these strategies will be effective or the alternative sources will be available in a timely manner. If these suppliers can no longer provide us with the materials we need to perform our tests and services, if the materials do not meet our quality specifications, or if we cannot obtain acceptable substitute materials, an interruption in test processing and services could occur. Any such interruption may directly impact our revenue and cause us to incur higher costs. In particular, the continued spread of the coronavirus globally could materially and adversely impact our operations including without limitation our supply chain, which may have a material and adverse effect on our business, financial condition and results of operations.

We may experience problems in scaling our operations, or delays or reagent and supply shortages for our tests and services that could limit the growth of our revenue.

If we encounter difficulties in scaling our operations as a result of, among other things, quality control and quality assurance issues and availability of reagents and raw material supplies, we will likely experience reduced sales of our tests and services, increased repair or re-engineering costs, and defects and increased expenses due to switching to alternate suppliers, any of which would reduce our revenues and gross margins. Although we attempt to match our capabilities to estimates of marketplace demand, to the extent demand materially varies from our estimates, we may experience constraints in our operations and delivery capacity, which could adversely impact revenue in a given fiscal period. Should our need for raw materials and reagents used in our tests and services fluctuate, we could incur additional costs associated with either expediting or postponing delivery of those materials or reagents.

If we are unable to support demand for our tests and services, or any of our future tests, services or solutions, our business could suffer.

As demand for our tests and services grow, we will also need to continue to scale up our testing capacity and processing technology, expand customer service, billing and systems processes and enhance our internal quality assurance program. We will also need additional certified laboratory scientists and other scientific and technical personnel to process higher volumes of our tests and services. We cannot assure you that increases in scale, related improvements and quality assurance will be implemented successfully or that appropriate personnel will be available. Failure to implement necessary procedures, transition to new processes or hire the necessary personnel could result in higher costs of processing tests or inability to meet demand. There can be no assurance that we will be able to perform our testing and services on a timely basis at a level consistent with demand, or that our efforts to scale our operations will not negatively affect the quality of test results. If we encounter difficulty meeting market demand or quality standards, our reputation could be harmed and our future prospects and our business could suffer, causing a material adverse effect on our business, financial condition and results of operations.

Developing new tests and related services and solutions involves a lengthy and complex process, and we may not be able to commercialize on a timely basis, or at all, other tests, assays, services and solutions under development.

Developing new tests, services and solutions will require us to devote considerable resources to research and development. We may face challenges obtaining sufficient numbers of samples to validate a newly acquired or developed test or service. In order to develop and commercialize new tests and services, we need to:

- expend significant funds to conduct substantial research and development;
- conduct successful analytical and clinical studies;
- scale our laboratory processes to accommodate new tests and services; and
- build and maintain the commercial infrastructure to market and sell new tests and services.

Typically, few research and development projects result in commercial products, and success in early clinical studies often is not replicated in later studies. At any point, we may abandon development of a test, service or solutions or we may be required to expend considerable resources repeating clinical studies, which would adversely affect the timing for generating revenue from such test, service or solution. If a clinical validation study fails to demonstrate the prospectively defined endpoints of the study or if we fail to sufficiently demonstrate analytical validity, we might choose to abandon the development of the test, service or solution which could harm our business. In addition, competitors may develop and commercialize new competing tests, services and solutions faster than us or at a lower cost, which could have a material adverse effect on our business, financial condition and results of operations.

As of April 2020, we are in the process of launching a new product line of antibody testing for the COVID-19 virus. We are currently validating a serological, or antibody, test that measures the amount of antibodies present in the blood. In response to an infection, such as COVID-19, the body develops an overall immune response to fight the infection. One component of the immune system's response is the development of antibodies that attach to the virus and help eliminate it. Antibody tests detect the body's immune response to the infection caused by the virus rather than detecting the virus itself. The FDA has issued guidance allowing companies to market serological tests that have been validated following notification to FDA. Validated antibody tests offered under the policy should, among other things, include in test reports language explaining that negative results do not rule out COVID-19 infection and that follow-up testing with a molecular diagnostic should be considered to rule out infection. There is no guarantee that we will be successful in completing development or realize any revenue or benefit from these efforts.

If we are unable to develop or acquire tests, services and solutions to keep pace with rapid technological, medical and scientific change, our operating results and competitive position in the market could be affected.

Recently, there have been numerous advances in technologies relating to diagnostics, particularly diagnostics that are based on genomic information. These advances require us to continuously develop our technology and to work to develop new solutions to keep pace with evolving standards of care. Our clinical services and pharma services could become obsolete unless we continually innovate and expand our product offerings to include new clinical applications. If we are unable to develop or acquire new tests, services and solutions or to demonstrate the applicability of our tests and services for other diseases, our sales could decline and our competitive position could be harmed.

If we cannot enter into new clinical study collaborations, our product development and subsequent commercialization could be delayed.

In the past, we have entered into clinical study collaborations related to our tests and services, and our success in the future depends in part on our ability to enter into additional collaborations with highly regarded institutions. This can be difficult due to internal and external constraints placed on these organizations. Some organizations may limit the number of collaborations they have with any one company so as to not be perceived as biased or conflicted. Organizations may also have insufficient administrative and related infrastructure to enable collaboration with many companies at once, which can extend the time it takes to develop, negotiate and implement a collaboration. Moreover, it may take longer to obtain the samples we need which could delay our trials, publications, and product launches and reimbursement. Additionally, organizations often insist on retaining the rights to publish the clinical data resulting from the collaboration. The publication of clinical data in peer-reviewed journals is a crucial step in commercializing and obtaining reimbursement for our diagnostic tests, and our inability to control when and if results are published may delay or limit our ability to derive sufficient revenue from them.

If the U.S. Food and Drug Administration changes its enforcement policy as to laboratory developed tests (LDTs) or disagrees with our position that our clinical services tests are LDTs covered by the FDA's current enforcement discretion policy, we could be subject to a number of enforcement actions, any of which could have a material adverse effect on our clinical services and/or incur substantial costs and delays associated with trying to obtain pre-market clearance or approval and comply with applicable post-market requirements.

Clinical laboratory tests like our clinical services tests are regulated under CLIA as well as by applicable State laws and may also be subject to FDA regulation, depending on how the test is classified. For example, the FDA regulates *in vitro* diagnostic tests (also called *in vitro* devices or "IVDs"), specimen collection kits, analyte specific reagents (ASRs), and instruments used in conducting diagnostic testing. Tests that qualify as LDTs are currently subject to enforcement discretion by the FDA, but there is substantial uncertainty regarding the scope of the FDA's enforcement discretion policy and the proper interpretation of the definition of LDTs (as set forth in the 2014 draft guidance described below, which defines LDTs as "those *in vitro* diagnostic devices (IVD) that are intended for clinical use and are designed, manufactured and used within a single laboratory"). In October 2014, the FDA issued two draft guidance documents: "Framework for Regulatory Oversight of Laboratory Developed Tests," which provides an overview of how the FDA would regulate LDTs through a risk-based approach, and "FDA Notification and Medical Device Reporting for Laboratory Developed Tests", which provides guidance on how the FDA intends to collect information on existing LDTs, including adverse event reports. Pursuant to the Framework for Regulatory Oversight draft guidance, LDT manufacturers will be subject to medical device registration, listing, and adverse event reporting requirements. LDT manufacturers will be required to either submit a pre-market application and receive the FDA's approval before an LDT may be marketed or submit a pre-market notification in advance of marketing. The Framework for Regulatory Oversight draft guidance states that within six months after the guidance documents are finalized, all laboratories will be required to give notice to the FDA and provide basic information concerning the nature of the LDTs offered.

On November 18, 2016, however, the FDA announced that it would not release final versions of these guidance documents and would instead continue to work with stakeholders, the new administration and Congress to determine the right approach. On January 13, 2017, the FDA released a discussion paper on LDTs outlining a possible risk-based approach for FDA and Centers for Medicare & Medicaid Services, or CMS, oversight of LDTs. According to the 2017 discussion paper, previously marketed LDTs would not be expected to comply with most or all FDA oversight requirements (grandfathering), except for adverse event and malfunction reporting. In addition, certain new and significantly modified LDTs would not be expected to comply with pre-market review unless the agency determines certain tests could lead to patient harm. Since LDTs currently on the market would be grandfathered in, pre-market review of new and significantly modified LDTs could be phased-in over a four-year period, as opposed to the nine years proposed in the Framework for Regulatory Oversight draft guidance. In addition, tests introduced after the effective date, but before their phase-in date, could continue to be offered during pre-market review.

The discussion paper notes that the FDA will focus on analytical and clinical validity as the basis for marketing authorization. The FDA anticipates laboratories that already conduct proper validation should not be expected to experience new costs for validating their tests to support marketing authorization and laboratories that conduct appropriate evaluations would not have to collect additional data to demonstrate analytical validity for FDA clearance or approval. This goal would be achieved through a precertification process. The evidence of the analytical and clinical validity of all LDTs will be made publicly available. LDTs are encouraged to submit prospective change protocols in their pre-market submission that outline specific types of anticipated changes, the procedures that will be followed to implement them and the criteria that will be met prior to implementation.

In March 2017, a draft bill "The Diagnostics Accuracy and Innovation Act" (DAIA) was introduced in Congress. The bill sought to establish a new regulatory framework for the oversight of in vitro clinical tests ("IVCTs") which include LDTs. In 2020, Congress introduced "The Verifying Accurate, Leading-edge IVCT Development Act" (VALID) of 2020. A risk-based approach will be used to regulate IVCTs while grandfathering existing IVCTs. The new regulatory framework will include quality control and post-market reporting requirements. The FDA will have the authority to withdraw from the market IVCTs that present an unreasonable and substantial risk of severe illness or injury when used as intended. We cannot predict whether this draft bill will become law or the ultimate impact of its passage would have on our business. If the FDA implements a new framework for enforcement of its regulations against LDTs, our existing products that are classified as LDTs, if any, and/or any of our future LDTs we seek to develop and market for clinical use, we may be required to obtain pre-certification or approval before continuing to market such tests in the U.S. We may not be able to obtain such pre-certifications or approvals on a timely basis or at all. Our business could be negatively impacted as a result of commercial delay that may be caused by any new requirements.

If we are required to submit applications for our currently-marketed clinical services tests, we may be required to conduct additional studies, which may be time-consuming and costly and could result in our currently-marketed tests being withdrawn from the market. Continued compliance with the FDA's regulations would increase the cost of conducting our clinical services, and subject us to heightened regulation by the FDA and penalties for failure to comply with these requirements. Failure to comply with applicable regulatory requirements can result in enforcement action by the FDA, such as fines, product suspensions, warning letters, recalls, injunctions and other civil and criminal sanctions. Any other regulatory or legislative proposals that would increase general FDA oversight of clinical laboratories and LDTs could negatively impact our business if additional requirements are imposed. We are monitoring developments and anticipate that our clinical services products will be able to comply with requirements that are ultimately imposed by the FDA. In the meantime, we maintain our CLIA accreditation, which permits the use of LDTs for diagnostics purposes.

Similarly, notwithstanding any change in existing enforcement policies, if the FDA determines that any of our clinical services tests are IVDs, rather than LDTs and, accordingly, seeks to enforce the applicable medical device regulations against us, we could be subject to a wide range of penalties and would likely be prohibited from continuing to offer the applicable tests in interstate commerce until we have obtained FDA approval or clearance through the Premarket Approval (PMA) process or the 510(k) process, respectively, as applicable. Additionally, we could be subject to enforcement for noncompliance with the FDA's regulations on marketing and promotional communications, manufacturing, quality and safety standards, labeling, storage, registration and listing, recordkeeping, adverse event reporting, and any other regulations applicable to IVDs. Any adverse enforcement action against us may have a material adverse effect on our clinical services and results of operations.

If we are sued for product liability or errors and omissions liability related to our tests and services, we could face substantial liabilities that exceed our resources.

The marketing, sale and use of our tests and services could lead to product liability claims if someone were to allege that the test or service failed to perform as it was designed. We may also be subject to liability for errors in the results we provide to physicians or for a misunderstanding of, or inappropriate reliance upon, the information we provide. A product liability or errors and omissions liability claim could result in substantial damages and be costly and time consuming for us to defend. Although we maintain product liability and errors and omissions insurance, we cannot be certain that our insurance would fully protect us from the financial impact of defending against these types of claims or any judgments, fines or settlement costs arising out of such claims. Any product liability or errors and omissions 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 cause injury to our reputation or cause us to suspend sales of our products and solutions. The occurrence of any of these events could have a material adverse effect on our business, financial condition and results of operations.

Our failure to comply with fraud and abuse laws or payer regulations could result in our being excluded from participation in Medicare, Medicaid, or other governmental payer programs, subject to fines, penalties, and repayment obligations, decrease our revenues and adversely affect our results of operations and financial condition for our clinical services.

The Medicare program is administered by CMS, which, like the states that administer their respective state Medicaid programs, imposes extensive and detailed requirements on diagnostic services providers, including, but not limited to, rules that govern how we structure our relationships with physicians, how and when we submit reimbursement claims and how we provide our specialized diagnostic services. In addition, federal and state laws prohibit fraudulent billing and provide for the recovery of overpayments. In particular, if we fail to comply with federal and state documentation, coding and billing rules, we could be subject to liability under the federal False Claims Act, including criminal and/or civil penalties, loss of licenses and exclusion from the Medicare and Medicaid programs. The False Claims Act prohibits individuals and companies from knowingly submitting false claims for payments to, or improperly retaining overpayments from, the government. Private payers also have complex documentation, coding, and billing rules, and can bring civil actions against laboratories. Our failure to comply with applicable Medicare, Medicaid and other third party payer rules could result in liability under the False Claims Act, our inability to participate in a governmental payer program, recoupment or returning funds already paid to us, civil monetary penalties, criminal penalties and/or limitations on the operational function of our laboratory, all of which could adversely affect our results of operations and financial condition.

Risks Related to our Pharma Services (the Biopharma Business Acquired from CGI in July 2019)

We may not realize all of the anticipated benefits of the acquisition of the Biopharma Business or those benefits may take longer to realize than expected. We may also encounter significant unexpected difficulties in integrating the Biopharma Business.

Our ability to realize the anticipated benefits of the acquisition of the Biopharma Business depends, to a large extent, on our ability to integrate it successfully. The combination and integration of two independent operations is a complex, costly and time-consuming process. As a result, we have been required and are continuing to devote significant management attention and resources to integrating the business practices and operations of the Biopharma Business with our existing clinical services practices and operations. The integration process, which includes consolidating and/or moving laboratory and headquarter locations, may disrupt the operations and, if implemented ineffectively or if impacted by unforeseen negative economic or market conditions or other factors, we may not realize the full anticipated benefits of the acquisition. Our failure to meet the challenges involved in integrating the two operations to realize the anticipated benefits of such acquisition could cause an interruption of, or a loss of momentum in, our activities and could adversely affect our results of operations.

In addition, the overall integration of the operations may result in material unanticipated problems, expenses, liabilities, competitive responses, loss of customer relationships, and diversion of management's attention. The difficulties of combining the operations include but are not limited to:

- diversion of management's attention from the management of daily operations to integration matters;
- difficulties in achieving anticipated cost savings, synergies, business opportunities and growth prospects from combining the Biopharma Business with our existing clinical services operations;
- difficulties entering new markets or new laboratory or data management services where we have no or limited direct prior experience;
- difficulties in the integration of operations and systems;
- difficulties or delays in consolidating and/or moving laboratory and headquarter locations;
- difficulties in the assimilation of employees and in the retention of key employees;
- difficulties in retaining employees who may be vital to the integration of departments, information technology systems, including accounting systems, technologies, books and records, and procedures, and maintaining uniform standards, such as internal accounting controls, procedures, and policies;
- difficulties in the assimilation of different corporate cultures and business practices;
- difficulties in managing the expanded operations of a significantly larger and more complex company;
- potential deterioration in the sales and revenues of the tests and services of the Biopharma Business;
- costs and expenses associated with successfully executing the terms and conditions of the transition services agreement with CGI;
- costs and expenses associated with any undisclosed or potential liabilities;
- successfully managing relationships with our new strategic partners, suppliers and customer base; and
- challenges in maintaining existing, and establishing new business relationships.

Many of these factors are outside of our control and any one of them could result in increased costs, decreases in the amount of expected revenues and diversion of management's time and energy, which could materially impact the business, financial condition and our results of operations. In addition, even if the operations of our existing clinical services operations and the Biopharma Business are integrated successfully, we may not realize the full benefits of the acquisition, including the synergies, cost savings or sales or growth opportunities that we expect. These benefits may not be achieved within the anticipated time frame, or at all.

Furthermore, additional unanticipated costs which may be incurred in the continuing integration of operations or unanticipated increases in expenses unrelated to the acquisition of the Biopharma Business may offset the expected benefits from the acquisition of the Biopharma Business. In addition, the Company's acquisition of the Biopharma Business has resulted in the incurrence of additional amortization expenses related to intangible assets, which could have a material adverse effect on the Company's financial condition, operating results, and cash flow. Further, the acquisition of the Biopharma Business resulted in the Company recording significant goodwill and other assets, and we may be required to incur impairment charges, which could adversely affect our consolidated financial position and results of operations. All of these factors could decrease or delay the expected accretive effect of the Biopharma Business acquisition and negatively impact our business, financial condition and results of operations. As a result, we cannot be certain that the integration process and resulting combined operations will result in the realization of the full benefits anticipated from the acquisition.

Our results of operations following the acquisition of the Biopharma Business may be affected by factors different from those previously affecting the results of our operations and the Biopharma Business may not achieve comparable levels of revenues, profitability or productivity that existed prior to the acquisition, which could harm our business, financial condition or results of operations.

Our business prior to the acquisition of the Biopharma Business and our business after the acquisition of the Biopharma Business differ in certain respects and, accordingly, our results of operations and the market price of our common stock may be affected by factors different from those affecting our results of operations prior to the acquisition of the Biopharma Business. In addition, once fully integrated, the Biopharma Business may not achieve comparable levels of revenues, profitability or productivity that existed prior to the acquisition or otherwise perform as expected. The occurrence of any of these events could harm our business, financial condition or results of operations.

If we are unable to increase sales of the tests and services in our pharma services or to successfully develop and commercialize other proprietary tests in our pharma services, we may be unable to achieve profitability.

Our pharma services provide pharmaceutical and biotech companies, universities and contract research organizations performing clinical trials with lab testing services for patient stratification and treatment selection through an extensive suite of molecular- and biomarker-based testing services, DNA- and RNA- extraction and customized assay development and trial design consultation. It is unclear whether we will be able to maintain and grow the number of customers who will avail themselves of our tests and services, or how regular a flow of business we will be able to obtain from existing customers. If we are unable to increase sales of our tests and services or to successfully develop, validate and commercialize other diagnostic tests and services, our pharma services may not produce sufficient revenues to become profitable.

If pharmaceutical and biotech companies, universities and contract research organizations performing clinical trials decide not to use our diagnostic tests and services, we may be unable to generate sufficient revenue to sustain our pharma services.

To generate demand for our pharma services, we need to educate pharmaceutical and biotech companies, universities and contract research organizations performing clinical trials 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 pharmaceutical and biotech companies, universities and contract research organizations performing clinical trials to order our diagnostic tests and services or other future tests and services we develop, we will likely be unable to create demand for our tests and services in sufficient volume for us to achieve sustained profitability of our pharma services.

As a result of our pharma services, our quarterly operating results may be subject to significant fluctuations and may be difficult to forecast.

The nature of the services of our pharma 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 our customers 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.

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

Through our pharma services offerings, we contract with pharmaceutical and biotech companies, universities and contract research organizations performing clinical trials to perform lab testing services for patient stratification and treatment selection through an extensive suite of molecular- and biomarker-based testing services, DNA- and RNA- extraction and customized assay development and trial design consultation. Such services are complex and subject to contractual requirements, regulatory standards and ethical considerations. If we fail to perform our services in accordance with these requirements, standards, and considerations 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 clearances or 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, financial condition, and results of operations.

Risks Related to our Operations

The loss of members of our senior management team or our inability to attract and retain key personnel could adversely affect our business

As a small company with less than 200 employees, the success of our business depends largely on the skills, experience and performance of members of our senior management team, including our chief executive officer and chief commercial officer, and others in key management positions. The efforts of these persons will be critical to us as we continue to grow our clinical services and develop and/or acquire additional molecular diagnostic tests, and increase or maintain pharma services tests and service revenue or to successfully develop and commercialize other pharma services proprietary tests and services. If we were to lose one or more of these key employees, we may experience difficulties in competing effectively, developing our technologies and implementing our business strategy. In addition, our commercial laboratory operations depend on our ability to attract and retain highly skilled scientists, including licensed clinical laboratory scientists. We may not be able to attract or retain qualified scientists and technicians in the future due to the competition for qualified personnel, and we may have to pay higher salaries to attract and retain qualified personnel. We may also be at a disadvantage in recruiting and retaining key personnel as our small size, limited resources, and limited liquidity may be viewed as providing a less stable environment, with fewer opportunities than would be the case at one of our larger competitors. If we are not able to attract and retain the necessary personnel to accomplish our business objectives, we may experience constraints that could adversely affect our ability to support our clinical laboratory and commercialization.

If we lose the support of key opinion leaders or KOL's, it may limit our revenue growth from our tests or services and our ability to achieve profitability.

We have established relationships with leading oncology opinion leaders at premier cancer institutions and oncology networks. If these key opinion leaders determine that our existing products and services or other products and services that we develop are not clinically effective, that alternative technologies are more effective, or if they elect to use internally developed products, we would encounter significant difficulty validating our testing platform, driving adoption, or establishing our tests as a standard of care, which would limit our revenue growth and our ability to achieve profitability.

If we cannot maintain our current relationships, or enter into new relationships, with biopharmaceutical companies to leverage our bioinformatics data, we may be unable to recognize revenues from biopharmaceutical companies and our product development could be delayed.

We have limited experience in marketing and selling our products, and if we are unable to expand our direct sales and marketing force to adequately address our customer's needs, our business may be adversely affected.

Although we have been selling commercial products since 2014, genomic diagnostics and pharma services are new areas of science, and we continue to focus and refine our efforts to sell, market and receive reimbursement for our clinical service products and to leverage our bioinformatics data. We may not be able to market, sell, or distribute our existing products or services or other products or services we may develop effectively enough to support our planned growth.

Our future sales will depend in large part on our ability to develop, and substantially expand, our sales force and to increase the scope of our marketing efforts. Our target market of physicians is a large and diverse market. As a result, we believe it is necessary to develop a sales force that includes sales representatives with specific technical backgrounds. We will also need to attract and develop marketing personnel with industry expertise. Competition for such employees is intense. We may not be able to attract and retain personnel or be able to build an efficient and effective sales and marketing force, which could negatively impact sales and market acceptance of our products and services and limit our revenue growth and potential profitability.

Our expected future growth will impose significant added responsibilities on members of management, including the need to identify, recruit, maintain, and integrate additional employees. Our future financial performance and our ability to commercialize our products and leverage our data and to compete effectively will depend in part on our ability to manage this potential future growth effectively, without compromising quality.

If our sales force is less successful than anticipated, our business expansion plans could suffer and our ability to generate revenues could be diminished. In addition, we have limited history selling our clinical services tests on a direct basis and operating our pharma services, and leveraging our bioinformatics data and our limited history makes forecasting difficult.

If our sales force is not successful, or new additions to our sales team fail to gain traction among our customers, we may not be able to increase market awareness and sales of our molecular diagnostic tests and pharma services. If we fail to establish our clinical services tests and pharma services in the marketplace, it could have a negative effect on our ability to sell subsequent products or services and hinder the desired expansion of our business. We have growing, however limited, historical experience forecasting the direct sales of our clinical services products, and no prior history operating our pharma services. Our ability to produce product quantities that meet customer demand is dependent upon our ability to forecast accurately and plan production accordingly.

If we are unable to compete successfully in the markets our clinical services and pharma services operate in, we may be unable to increase or sustain our revenue or achieve profitability.

We compete with physicians and the medical community who use traditional methods to diagnose gastrointestinal, endocrine and lung cancers and to conduct clinical trials. In many cases, practice guidelines in the United States have recommended non molecular testing like cytology or diagnostic surgery to determine if a patient's condition is malignant or benign. As a result, we believe that we will need to continue to educate physicians and the medical community on the value and benefits of our clinical services tests in order to impact clinical practices. In addition, we face competition from other companies that offer diagnostic tests. Specifically, in regard to our thyroid diagnostic tests, Veracyte has thyroid nodule cancer diagnostic tests which are currently on the market that compete with our ThyGeNEXT® and ThyraMIR® tests. Quest currently offers Veracyte's tests via a co-marketing agreement, and CBL is offering a diagnostic test performed via the University of Pittsburgh Medical Center (UPMC) that analyzes genetic alterations using next-generation sequencing mutation panel for pancreatic cysts. While we do not believe we currently have significant direct competition for PancraGEN® in the gastrointestinal market, technology such as a next-generation sequencing mutation panel could in the future lead to increased competition.

It is also possible that we face future competition from laboratory developed tests, or LDTs, developed by commercial laboratories such as Quest and/or other diagnostic companies developing new molecular diagnostic tests or technologies. Furthermore, we may be subject to competition as a result of the new, unforeseen technologies that can be developed by our competitors in the gastrointestinal and endocrine cancer molecular diagnostic testing space. To compete successfully, we must be able to demonstrate, among other things, that our test results are accurate and cost effective, and we must secure a meaningful level of reimbursement for our tests. Since our clinical services began in 2014, many of our potential competitors have stronger brand recognition and greater financial capabilities than we do. Others may develop a test with a lower price than ours that could be viewed by physicians and payers as functionally equivalent to our molecular diagnostic tests or offer a test at prices designed to promote market penetration, which could force us to lower the price of our clinical services tests and affect our ability to achieve and maintain profitability. If we are unable to compete successfully against current and future competitors, we may be unable to increase market acceptance of our clinical services tests and overall sales, which could prevent us from increasing our revenue or achieving profitability and cause the market price of our common stock to decline. As we add new clinical services tests and other products and services, we will likely face many of these same competitive risks that we do currently.

With respect to our pharma services, 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 for our pharma services include public companies such as NeoGenomics and many private companies.

If we cannot license rights to use third-party technologies on reasonable terms, we may not be able to commercialize new products or services in the future.

In the future, we may license third-party technology to develop or commercialize new products or offer new services. In return for the use of a third-party's technology, we may agree to pay the licensor royalties based on sales of our solutions. Royalties are a component of cost of revenue and affect the margins on our solutions. We may also need to negotiate licenses to patents and patent applications after introducing a commercial product. Our business may suffer if we are unable to enter into the necessary licenses on acceptable terms, or at all, if any necessary licenses are subsequently terminated, if the licensors fail to abide by the terms of the license or fail to prevent infringement by third parties, or if the licensed patents or other rights are found to be invalid or unenforceable.

Unfavorable results of legal proceedings could have a material adverse effect on our business, financial condition and results of operations.

We may become subject to various legal proceedings and claims that arise in or outside the ordinary course of business. The results of legal proceedings cannot be predicted with certainty. Regardless of merit, litigation may be both time-consuming and disruptive to our operations and cause significant expense and diversion of management attention. If we do not prevail in the legal proceedings, we may be faced with significant monetary damages or injunctive relief against us that could have a material adverse effect on our business, financial condition and results of operations.

If a catastrophe strikes any of our laboratories or if any of our laboratories becomes inoperable for any other reason, we will be unable to perform our testing and pharma services and our business will be harmed.

The laboratories and equipment we use to perform our tests and services would be costly to replace and could require substantial lead time to replace and qualify for use if they became inoperable. Our facilities may be harmed or rendered inoperable by natural or man-made disasters, including earthquakes, flooding, power outages, and health epidemics or pandemics, including the outbreak of Coronavirus (COVID-19), which may render it difficult or impossible for us to perform our testing or services for some period of time or to receive and store samples. The inability to perform our tests or services for even a short period of time, including due to disruption in staffing, supplies, distribution, or transport or temporary closures related to an outbreak of disease such as Coronavirus (COVID-19), may result in the loss of customers or harm our reputation, and we may be unable to regain those customers in the future. Although we maintain insurance for damage to our property and the disruption of our business, 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. In December 2019, a novel strain of the Coronavirus or COVID-19 emerged in China. The virus has now spread to other countries, including the United States, and could materially and adversely impact our operations. Additionally, continued spread of the COVID-19 globally and resulting travel and other restrictions that may be imposed could negatively impact our ability to obtain raw materials needed for manufacture of our clinical services testing, our ability to provide testing and our pharma services to patients, our financial condition and our results of operation. The extent to which the COVID-19 and global efforts to contain its spread will impact our operations will depend on future developments, which are highly uncertain and cannot be predicted at this time, and include the duration, severity and scope of the outbreak and the actions taken to contain or treat the COVID-19 outbreak.

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 current international operations are not material to our overall financial results, but our business strategy includes doing clinical business in Canada and pharma services collaborations in China and, may in the future, include plans for international expansion. Doing business internationally involves a number of risks, including:

- multiple, conflicting, and changing laws and regulations such as data protection laws, privacy regulations, tax laws, export and import restrictions, employment laws, regulatory requirements (including requirements related to patient consent);
- testing of genetic material and reporting the results of such testing and other governmental approvals, permits, and licenses, or government delays in issuing such approvals, permits, and licenses;
- failure by us to obtain regulatory approvals for the manufacture, sale, and use of our products in various countries;
- additional, potentially relevant third-party intellectual property rights;
- complexities and difficulties in obtaining protection for and enforcing our intellectual property;
- difficulties in staffing and managing foreign operations;
- complexities associated with obtaining reimbursement from and managing multiple payer reimbursement regimes, government payers, or patient self-pay systems;
- logistics and regulations associated with preparing, shipping, importing and exporting tissue samples, including infrastructure conditions, transportation delays, and customs;
- limits in our ability to penetrate international markets if we are not able to perform our molecular tests locally;
- financial risks, such as the impact of local and regional financial crises on demand and payment for our products, and exposure to foreign currency exchange rate fluctuations;
- natural disasters, political and economic instability, including wars, terrorism, and political unrest, outbreak of disease, epidemics, pandemics, including the outbreak of COVID-19, boycotts, curtailment of trade, and other business restrictions; and
- regulatory and compliance risks that relate to maintaining accurate information and control over sales and distribution activities that may fall within the purview of the U.S. Foreign Corrupt Practices Act, or FCPA, including its books and records provisions, or its anti-bribery provisions.

Any of these factors could significantly harm our future international expansion and operations and, consequently, our revenue and results of operations. The difference in regulations under U.S. law and the laws of foreign countries may be significant and, in order to comply with the laws of foreign countries, we may have to implement global changes to our products or business practices. Such changes may result in additional expense to us and either reduce or delay product development, commercialization or sales. In addition, any failure to comply with applicable legal and regulatory obligations could impact us in a variety of ways that include, but are not limited to, significant criminal, civil and administrative penalties, including imprisonment of individuals, fines and penalties, denial of export privileges, seizure of shipments, and restrictions on certain business activities. Also, the failure to comply with applicable legal and regulatory obligations could result in the disruption of our activities in these countries.

Our international operations could be affected by changes in laws, trade regulations, labor and employment regulations, and procedures and actions affecting approval, production, pricing, reimbursement and marketing of our products, as well as by inter-governmental disputes. Any of these changes could adversely affect our business. Our success internationally will depend, in part, on our ability to develop and implement policies and strategies that are effective in anticipating and managing these and other risks in the countries in which we do business. Failure to manage these and other risks may have a material adverse effect on our operations in any particular country and on our business as a whole.

If we use hazardous materials in a manner that causes contamination or injury, we could be liable for resulting damages.

We are subject to Federal, State and local laws, rules and regulations governing the use, discharge, storage, handling and disposal of biological material, chemicals and waste. 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, remediation costs and any related penalties or fines, and any liability could exceed our resources or any applicable insurance coverage we may have. The cost of compliance with these laws and regulations may become significant, and our failure to comply may result in substantial fines or other consequences, and either could have a significant impact on our operating results.

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

Our business requires that we and our third-party service providers collect and store sensitive data, including legally protected health information, personally identifiable information about patients, credit card information, and our proprietary business and financial information. As a covered entity, we must comply with the HIPAA privacy and security regulations, which may increase our operational costs. Furthermore, the privacy and security regulations provide for significant fines and other penalties for wrongful use or disclosure of protected health information, or PHI, including potential civil and criminal fines and penalties. We face a number of risks relative to our protection of, and our service providers' protection of, this critical information, including loss of access, fraudulent modifications, inappropriate disclosure and inappropriate access, as well as risks associated with our ability to identify and audit such events. 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 may be vulnerable to attacks by hackers or viruses or otherwise breached due to employee error, malfeasance or other activities. If such event would occur and cause interruptions in our operations, our networks would be compromised and the information we store on those networks could be accessed by unauthorized parties, publicly disclosed, modified without our knowledge, lost or stolen. In 2017, we discovered malware installed on certain servers. After an internal investigation, we do not believe that any PHI or other sensitive data on the affected servers was accessed or compromised. We removed the malware, and enhanced our cybersecurity procedures.

Additionally, we share PHI with third-party contractors who are contractually obligated to safeguard and maintain the confidentiality of PHI. Unauthorized persons may be able to gain access to PHI stored in such third-party contractors' computer networks. Any wrongful use or disclosure of PHI by us or our third-party contractors, including disclosure due to data theft or unauthorized access to our or our third-party contractors' computer networks, could subject us to fines or penalties that could adversely affect our business and results of operations. Although the HIPAA statute and regulations do not expressly provide for a private right of damages, we also could incur damages under state laws to private parties for the wrongful use or disclosure of confidential health information or other private personal information by us or our third-party contractors. Unauthorized access, loss, modification or dissemination could disrupt our operations, including our ability to process tests, provide test results, bill payers or patients, process claims, provide customer assistance services, conduct research and development activities, collect, process and prepare company financial information, provide information about our solution 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. In addition, the interpretation and application of consumer, health-related and data protection laws in the United States 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. Complying with these various laws could cause us to incur substantial costs or require us to change our business practices, systems and compliance procedures in a manner adverse to our business.

We may need to increase the size of our organization, and we may experience difficulties in managing this growth.

We are a small company with less than 200 employees. We may increase the number of employees in the future depending on the progress and growth of our business. Future growth will impose significant added responsibilities on members of management, including the need to identify, attract, retain, motivate and integrate additional employees with the necessary skills to support the growing complexities of our business. Rapid and significant growth may place strain on our administrative, financial and operational infrastructure. Our future financial performance and our ability to sell or promote our existing tests and services and develop and commercialize new tests and services and to compete effectively will depend, in part, on our ability to manage any future growth effectively. To that end, we must be able to:

- manage our clinical studies effectively;
- integrate additional management, administrative, manufacturing and regulatory personnel;
- maintain sufficient administrative, accounting and management information systems and controls; and
- hire and train additional qualified personnel.

We may not be able to accomplish these tasks, and our failure to accomplish any of them could harm our financial results. We may need to reduce the size of our organization in order to become profitable and we may experience difficulties in managing these reductions.

We are incurring significant costs and devote substantial management time as a result of operating as a public company.

As a public company, we are incurring significant legal, accounting and other expenses. For example, in addition to being required to comply with certain requirements of the Sarbanes-Oxley Act of 2002 (the Sarbanes-Oxley Act), we are 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 continue to 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 continue to 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, if we lose our status as 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.

Risks Related to Regulation within our Markets

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

We are subject to CLIA regulations, a Federal law that regulates clinical laboratories that perform testing on specimens derived from humans for the purpose of providing information for the diagnosis, prevention or treatment of disease. CLIA regulations mandate specific personnel qualifications, facilities administration, quality systems, inspections and proficiency testing. CLIA certification is also required in order for us to be eligible to bill Federal and State healthcare programs, as well as many private third-party payers, for our molecular diagnostic tests. To renew these certifications, we are subject to survey and inspection every two years. Moreover, CLIA inspectors may make random inspections of our clinical reference laboratories. We are also required to maintain State licenses to conduct testing in our New Haven, Connecticut and Pittsburgh, Pennsylvania laboratories. Connecticut and Pennsylvania laws require that we maintain a license, and establish standards for the day-to-day operation of our clinical reference laboratories in New Haven, Connecticut and Pittsburgh, Pennsylvania. In addition, our Pittsburgh and New Haven laboratories are required to be licensed on a test-specific basis by certain states, including California, Florida, Maryland, New York and Rhode Island. California, Florida, Maryland, New York and Rhode Island laws also mandate proficiency testing for laboratories licensed under the laws of each respective State regardless of whether such laboratories are located in California, Florida, Maryland, New York or Rhode Island. If we were unable to obtain or maintain our CLIA certificate for our laboratories, whether as a result of revocation, suspension or limitation, we would no longer be able to perform our current clinical services and pharma services, which could have a material adverse effect on our business, financial condition and results of operations. If we were to lose our licenses issued by States where we are required to hold licenses, if such licenses expired or were not renewed, or if we failed to obtain and maintain a State license that we are required to hold, we may be subject to significant fines, penalties and liability, and may be forced to cease testing specimens from those States, which could have a material adverse effect on our business, financial condition and results of operations. New molecular diagnostic tests and pharma services we may develop may be subject to new requirements by governmental bodies, including state governments, and we may not be able to offer our new molecular diagnostic tests or pharma services in such jurisdictions until such requirements are met.

Legislation reforming the U.S. healthcare system may have a material adverse effect on our financial condition and operations.

PPACA made changes that significantly affected the pharmaceutical, medical device and clinical laboratory industries. For example, PPACA include coordination and promotion of research on comparative clinical effectiveness of different technologies and procedures, initiatives to revise Medicare payment methodologies, such as bundling of payments across the continuum of care by providers and physicians, and initiatives to promote quality indicators in payment methodologies. PPACA also includes significant new fraud and abuse measures, including required disclosures of financial arrangements with physicians, lower thresholds for violations and increasing potential penalties for such violations. The effect of PPACA and any potential changes that may be necessitated by the legislation is uncertain, any of which may potentially affect our business.

Our current position is that we do not meet the definition of an “Applicable Manufacturer” under the Physician Payments Sunshine Act of the PPACA and are therefore not subject to the disclosure or tax requirements contained in PPACA. If the government were to reach a different conclusion, our failure to disclose could result in significant monetary penalties and potential claims from certain third parties.

PPACA, as well as other healthcare reform measures that have been and may be adopted in the future, may result in more rigorous coverage criteria, new payment methodologies and in additional downward pressure on the price that we receive for any approved product or service, and could seriously harm our future revenues. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payers. The implementation of cost containment measures or other healthcare reforms may compromise our ability to generate revenue, attain profitability or commercialize our products. At the same time, there have been significant ongoing efforts to repeal, revise, or replace PPACA. For example, the Tax Cuts and Jobs Act enacted on December 22, 2017 repealed the shared responsibility payment for individuals who fail to maintain minimum essential coverage under section 5000A of the Internal Revenue Code, commonly referred to as the individual mandate, beginning in 2019. The Joint Committee on Taxation estimates that the repeal will result in over 13 million Americans losing their health insurance coverage over the next ten years and is likely to lead to increases in insurance premiums.

On January 20, 2017, President Trump signed an executive order directing federal agencies to exercise existing authorities to reduce burdens associated with PPACA pending further action by Congress. In April 2018, CMS issued a final rule and guidance documents which changed requirements for health plans sold through PPACA marketplaces for 2019. These changes include, for example, turning over responsibility for ensuring that marketplace plans have enough health care providers in their networks to the states that rely on the federal HealthCare.gov exchange; allowing states to alter aspects of the essential health benefits required of health plans sold through the federal and state insurance marketplaces; eliminating certain Small Business Health Options Program (SHOP) regulatory requirements; and outlining criteria by which insurers may reduce the percentage of income allocated to patient care. The U.S. Department of Labor issued a final rule in June 2018 to expand the availability of association health plans available to small business owners and self-employed individuals, beginning on September 1, 2018. These association health plans will not be required to provide the essential health benefits mandated by PPACA. These and other regulations may impact coverage of certain health care services.

In 2018, Congress has proposed further legislation to repeal or revise PPACA, which if enacted, may have a significant impact on the health care system. Also, in 2018, in *Texas v. U.S.,* states and individual plaintiffs sued the federal government seeking to have the PPACA struck down. The trial court held that the provision related to individual coverage requirements or the individual mandate was unconstitutional. In December 2019, the U.S. Court of Appeals for the 5th Circuit affirmed the trial court's decision and sent the case back to the trial court. In the interim, parties supporting the PPACA sought expedited review by the U.S. Supreme Court; however, the Court did not expedite the case, and it remains unknown whether it will consider the case in its next term in the Fall of 2020. Further legislative changes to PPACA or to regulations implementing provisions of PPACA remain possible. Repeal of or changes to PPACA may affect coverage, reimbursement, and utilization of laboratory services, as well as administrative requirements, in ways that are currently unpredictable and therefore we cannot predict the impact on our revenues.

In addition to PPACA, the effect of which cannot presently be fully quantified, various healthcare reform proposals have periodically emerged from Federal and State governments. For example, in February 2012, Congress passed the Middle Class Tax Relief and Job Creation Act of 2012, which reduced the clinical laboratory payment rates on the Medicare CLFS by 2% in 2013. In addition, a further reduction of 2% was implemented under the Budget Control Act of 2011, which is to be in effect for dates of service on or after April 1, 2013 until fiscal year 2024. Reductions resulting from the Congressional sequester are applied to total claim payments made; however, they do not currently result in a rebasing of the negotiated or established Medicare or Medicaid reimbursement rates.

State legislation on reimbursement applies to Medicaid reimbursement and Managed Medicaid reimbursement rates within that State. Some States have passed or proposed legislation that would revise reimbursement methodology for clinical laboratory payment rates under those Medicaid programs.

We cannot predict whether future healthcare initiatives will be implemented at the Federal or State level or in countries outside of the United States in which we may do business, or the effect any future legislation or regulation will have on us. The taxes imposed by Federal legislation, cost reduction measures and the expansion in the role of the U.S. government in the healthcare industry may result in decreased revenue, lower reimbursement by payers for our tests or reduced medical procedure volumes, all of which may adversely affect our business, financial condition and results of operations.

Ongoing calls for deficit reduction at the Federal government level and reforms to programs such as the Medicare program to pay for such reductions may affect the pharmaceutical, medical device and clinical laboratory industries. In particular, recommendations by the Simpson-Bowles Commission called for the combination of Medicare Part A (hospital insurance) and Part B (physician and ancillary service insurance) into a single co-insurance and co-payment structure. Currently, certain clinical laboratory services are excluded from the Medicare Part B co-insurance and co-payment as preventative services. Combining Parts A and B may require clinical laboratories to collect co-payments from Medicare patients, which may increase our costs and reduce the amount ultimately collected.

CMS bundles payments for clinical laboratory tests together with other services performed during hospital outpatient visits under the Hospital Outpatient Prospective Payment System. CMS has exempted certain molecular diagnostic tests from this bundling provision. It is possible that this exemption could be removed by CMS in future rule making, which might result in lower reimbursement for tests performed in this setting.

In April 2014, President Obama signed PAMA, which included a substantial new payment system for clinical laboratory tests under the CLFS. PAMA removed CMS's authority to adjust the CLFS based and established a new method for setting CLFS rates. Implementation of this new method for setting CLFS rates began in 2016. Laboratories that receive a majority of their Medicare revenues from payments made under the CLFS and the Physician Fee Schedule must report on triennial bases (or annually for advanced diagnostic laboratory tests, or ADLTs), private payer rates and volumes for their tests with specific CPT codes based on final payments made during a set period of data collection (the first of which was January 1 through June 30, 2016). CMS posted the new Medicare CLFS rates (based on weighted median private payer rates) in November 2017 and the new rates became effective beginning on January 1, 2018. Any reductions to payment rates resulting from the new methodology are limited to 10% per test per year in each of the years 2018 through 2020 and to 15% per test per year in each of the years 2021 through 2023. CMS has issued draft regulations regarding these changes. Further rule-making from CMS will define the time period and data elements evaluated on an annual basis to set reimbursement rates for tests like ours. Under the revised Medicare Clinical Laboratory Fee Schedule, reimbursement for clinical laboratory testing was reduced in 2018 and is scheduled to be reduced in 2019 and 2020. PAMA calls for further revisions of the Medicare Clinical Laboratory Fee Schedule for years after 2020, based on future surveys of market rates. Further reductions in reimbursement may result from such revisions. In December 2019, through the Further Consolidated Appropriations Act of 2020, Congress delayed the next data reporting period under PAMA from 2020 to 2021 for final payments made between January 1 and June 30, 2019, extending the applicability of the payment rates based on 2017 reporting by one year through December 31, 2021.

There have also been recent and substantial changes to the payment structure for physicians, including changes passed under the Medicare Access and CHIP Reauthorization Act of 2020, or MACRA. MACRA created the Merit-Based Incentive Payment System which more closely aligns physician payments with composite performance on performance metrics similar to three existing incentive programs (i.e., the Physician Quality Reporting System, the Value-Based Modifier program and the Electronic Health Record Meaningful Use program), and incentivizes physicians to enroll in alternative payment methods. At this time, we do not know whether these changes to the physician payment systems will have any impact on orders or payments for our tests.

In December 2016, Congress passed the 21st Century Cures Act, which, among other things, revised the process for Local Coverage Determinations (LCDs). CMS and the MACs are in the process of implementing these revisions and we cannot predict whether these revisions will delay coverage for our test products, which could have a material negative impact on revenue.

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

We are subject to regulation by both the Federal government and the governments of the states in which we conduct our operations. The federal and state laws which may apply to us include, but are not limited to:

- The Food, Drug and Cosmetic Act, as supplemented by various other statutes;
- The Prescription Drug Marketing Act of 1987, the amendments thereto, and the regulations promulgated thereunder and contained in 21 C.F.R. Parts 203 and 205;
- CLIA and state licensing requirements;
- Manufacturing and promotion laws;
- Medicare and Medicaid billing and payment regulations applicable to clinical laboratories;
- The Eliminating Kickbacks in Recovery Act of 2018 (EKRA), which prohibits the solicitation, receipt, payment or offer of any remuneration (including any kickback, bribe, or rebate) directly or indirectly, overtly or covertly, in cash or in kind, in return for referring a patient or patronage to a recovery home, clinical treatment facility, or laboratory for services covered by both government and private payers;
- The Federal Anti-Kickback Statute (and state equivalents), which prohibits knowingly and willfully offering, paying, soliciting, or receiving remuneration, directly or indirectly, in exchange for or to induce either the referral of an individual, or the furnishing, arranging for, or recommending of an item or service that is reimbursable, in whole or in part, by a Federal healthcare program;
- The Federal physician self-referral law, commonly referred to as the "Stark Law," (and state equivalents), which prohibits a physician from making a referral for certain designated health services covered by the Medicare program, including laboratory and pathology services, if the physician or an immediate family member has a financial relationship with the entity providing the designated health services, unless the financial relationship falls within an applicable exception to the prohibition;
- HIPAA, which established comprehensive federal standards with respect to the privacy and security of protected health information and requirements for the use of certain standardized electronic transactions, and amendments made in 2013 to HIPAA under the Health Information Technology for Economic and Clinical Health Act, which strengthen and expand HIPAA privacy and security compliance requirements, increase penalties for violators, extend enforcement authority to state attorneys general, and impose requirements for breach notification;

- The Federal Civil Monetary Penalties Law, which prohibits, among other things, the offering or transfer of remuneration to a Medicare or state healthcare program beneficiary if the person knows or should know it is likely to influence the beneficiary's selection of a particular provider, practitioner, or supplier of services reimbursable by Medicare or a state healthcare program, unless an exception applies;

- The Federal False Claims Act (and state equivalents), which 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 to the federal government;

- The federal transparency requirements under the PPACA, including the provisions commonly referred to as the Physician Payments Sunshine Act, which requires certain manufacturers of drugs, devices, biologics and medical supplies that are reimbursable under Medicare, Medicaid or Children's Health Insurance Program to report annually to CMS information related to payments and other transfers of value to physicians and teaching hospitals, and ownership and investment interests held by physicians and their immediate family members;

- Other Federal and State fraud and abuse laws, prohibitions on self-referral and kickbacks, fee-splitting restrictions, prohibitions on the provision of products at no or discounted cost to induce physician or patient adoption, and false claims acts, transparency, reporting, and disclosure requirements, which may extend to services reimbursable by any third-party payer, including private insurers;

- The prohibition on reassignment of Medicare claims, which, subject to certain exceptions, precludes the reassignment of Medicare claims to any other party;

- The Protecting Access to Medicare Act of 2014, which requires us to report private payer rates and test volumes for specific CPT codes on a triennial basis and imposes penalties for failures to report, omissions, or misrepresentations;

- The rules regarding billing for diagnostic tests reimbursable by the Medicare program, which prohibit a physician or other supplier from marking up the price of the technical component or professional component of a diagnostic test ordered by the physician or other supplier and supervised or performed by a physician who does not "share a practice" with the billing physician or supplier; and

- State laws that prohibit other specified practices related to billing such as billing physicians for testing that they order, waiving coinsurance, co-payments, deductibles, and other amounts owed by patients, and billing a State Medicaid program at a price that is higher than what is charged to other payers.

In recent years U.S. Attorneys' Offices have increased scrutiny of the healthcare industry, as have Congress, the Department of Justice, the Department of Health and Human Services' Office of the Inspector General and the Department of Defense. These bodies have all issued subpoenas and other requests for information to conduct investigations of, and commenced civil and criminal litigation against, healthcare companies based on financial arrangements with health care providers, regulatory compliance, product promotional practices and documentation, and coding and billing practices. Whistleblowers have filed numerous qui tam lawsuits against healthcare companies under the federal and state False Claims Acts in recent years, in part because the whistleblower can receive a portion of the government's recovery under such suits.

The growth of our business may increase the potential of violating these laws, regulations or our internal policies and procedures. The risk of our being found in violation of these or other laws and regulations is further increased by the fact that many have not been fully interpreted by the regulatory authorities or the courts, and their provisions are open to a variety of interpretations. Violations of Federal or State regulations may incur investigation or enforcement action by the FDA, Department of Justice, State agencies, or other legal authorities, and may result in substantial civil, criminal, or other sanctions. Any action brought against us for violation of these or other 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 civil and criminal penalties, damages and fines, we could be required to refund payments received by us, we could face possible exclusion from Medicare, Medicaid and other Federal or State healthcare programs and we could even be required to cease our operations. Any of the foregoing consequences could have a material adverse effect on our business, financial condition and results of operations.

A failure to comply with Federal and State laws and regulations pertaining to our payment practices could result in substantial penalties.

We retain healthcare practitioners as key opinion leaders providing consultation in various aspects of our business, maintain a sales force, and contract for marketing services. These arrangements, like any arrangement that includes compensation to a healthcare provider or potential referral source, may trigger Federal or State anti-kickback, Stark Law liability, and False Claims Act liability. There are no guarantees that the Federal or State governments will find that these arrangements are designed properly or that they do not trigger liability under Federal and State laws. Under existing laws, all arrangements must be commercially reasonable and compensation must be fair market value. These terms require some subjective analysis. Safe harbors in the anti-kickback laws do not necessarily equate to exceptions in the Stark Law, and there is no guarantee that the government will agree with our payment practices with respect to the relationships between our laboratories and the healthcare providers, sales force members, or other parties. A failure to comply with Federal and State laws and regulations pertaining to our payment practices could result in substantial penalties and adversely affect our business, financial condition and results of operations.

In addition, federal law prohibits any entity from offering or transferring to a Medicare or Medicaid beneficiary any remuneration that the entity knows or should know is likely to influence the beneficiary's selection of a particular provider, practitioner or supplier of Medicare or Medicaid payable items or services, including waivers of copayments and deductible amounts (or any part thereof) and transfers of items or services for free or for other than fair market value. Entities found in violation may be liable for civil monetary penalties of up to $10,000 for each wrongful act. Further, Federal and state anti-kickback statutes or similar laws may be implicated by arrangements with patients to waive, reduce, or limit copays or other payment amounts, such as our Patient Assistance Program. Third-party payers, including commercial payers and government payers, may prohibit, limit, or restrict certain financial arrangements with patients. Violation of these laws or payment policies could result in significant fines, penalties, liability, recoupment, and exclusion from Medicare and Medicaid, which could have a material adverse effect on our business, results of operations, financial condition and cash flows.

We could be adversely affected by violations of the FCPA and other worldwide anti-bribery laws.

These laws are complex and far-reaching in nature, and, as a result, we cannot assure you that we would not be required in the future to alter one or more of our practices to be in compliance with these laws, any changes in these laws, or the interpretation.

Changes in governmental regulation could negatively impact our business operations and increase our costs.

The pharmaceutical, biotechnology and healthcare industries are subject to a high degree of governmental regulation. Significant changes in these regulations affecting our business could result in the imposition of additional restrictions on our business, additional costs to us in providing our tests or services to our customers or otherwise negatively impact our business operations. Changes in governmental regulations mandating price controls and limitations on patient access to our products could also reduce, eliminate or otherwise negatively impact our sales.

Risks Relating To Our Intellectual Property

If we are unable to protect our intellectual property effectively, our business would be harmed.

We rely on patent protection as well as trademark, trade secret and other intellectual property rights protection and contractual restrictions to protect our proprietary technology. If we fail to protect our intellectual property, third parties may be able to compete more effectively against us and we may incur substantial litigation costs in our attempts to recover or restrict use of our intellectual property. While we apply for patents covering our products and technologies and uses thereof, we may fail to apply for patents on important products and technologies in a timely fashion or at all, or we may fail to apply for patents in relevant jurisdictions. Others could seek to design around our current or future patented technologies. We may not be successful in defending any challenges made against our patents or patent applications. On January 16, 2018, we were notified that an Opposition had been filed against EP patent #2772550 alleging that the patent is invalid. On February 25, 2019, the European Patent Office Opposition Division issued a decision revoking the patent on grounds that the claims were not supported by a valid basis. On April 25, 2019 we filed a Notice of Appeal challenging the European Patent Office Opposition Division and we are waiting for the appeal to be decided. Any successful third-party challenge to our patents could result in the unenforceability or invalidity of such patents and increased competition to our business. The outcome of patent litigation, such as oppositions or post-grant reviews can be uncertain and any attempt by us to enforce our patent rights against others may not be successful, or, if successful, may take substantial time and result in substantial cost, and may divert our efforts and attention from other aspects of our business.

Monitoring unauthorized disclosure is difficult, and we do not know whether the steps we have taken to prevent such disclosure are, or will be, adequate. If we were to enforce a claim that a third-party had illegally obtained and was using our trade secrets, it would be expensive and time consuming, and the outcome would be unpredictable. Further, competitors could willfully infringe our intellectual property rights, design around our protected technology or develop their own competitive technologies that arguably fall outside of our intellectual property rights. Others may independently develop similar or alternative products and technologies or replicate any of our products and technologies. If our intellectual property does not adequately protect us against competitors' products and methods, our competitive position could be adversely affected, as could our business and the results of our operations. To the extent our intellectual property offers inadequate protection, or is found to be invalid or unenforceable, we would be exposed to a greater risk of competition. If our intellectual property does not provide adequate coverage of our competitors' products, our competitive position could be adversely affected, as could our overall business. Both the patent application process and the process of managing patent disputes can be time consuming and expensive.

Changes in U.S. patent law could diminish the value of patents in general, thereby impairing our ability to protect our molecular diagnostic tests.

As is the case with other companies operating in our industry, our success is somewhat dependent on intellectual property, particularly on obtaining and enforcing patents. Obtaining and enforcing patents of molecular diagnostics tests, like our molecular diagnostic tests in our PancraGEN® and miR*Inform*® platforms (including ThyGeNEXT®), involves both technological and legal complexity, and is therefore costly, time-consuming and inherently uncertain. From time-to-time the U.S. Supreme Court, other Federal courts, the U.S. Congress or the United States Patent and Trademark Office, or the USPTO, may change the standards of patentability and 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. On March 30, 2012, in the case *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, the U.S. Supreme Court reversed the Federal Circuit's application of Bilski and invalidated a patent focused on a process for identifying a proper dosage for an existing therapeutic because the patent claim embodied a law of nature. On July 3, 2012, the USPTO released a memorandum entitled "2012 Interim Procedure for Subject Matter Eligibility Analysis of Process Claims Involving Laws of Nature," with guidelines for determining patentability of diagnostic or other processes in line with the Mayo decision. On June 13, 2013, in *Association for Molecular Pathology v. Myriad Genetics*, the Supreme Court held that a naturally occurring DNA segment is a product of nature and not patent eligible merely because it has been isolated. The Supreme Court did not address the patentability of any innovative method claims involving the manipulation of isolated genes. On March 4, 2014, the USPTO released a memorandum entitled "2014 Procedure for Subject Matter Eligibility Analysis Of Claims Reciting Or Involving Laws Of Nature/Natural Principles, Natural Phenomena, And/Or Natural Products." This memorandum provides guidelines for the USPTO's new examination procedure for subject matter eligibility under 35 U.S.C. § 101 for claims embracing natural products or natural principles.

On June 12, 2015, the Federal Circuit issued a decision in*Ariosa v. Sequenom* holding that a method for detecting a paternally inherited nucleic acid of fetal origin performed on a maternal serum or plasma sample from a pregnant female were unpatentable as directed to a naturally occurring phenomenon. On July 30, 2015, the USPTO released a Federal Register Notice entitled, "July 2015 Update on Subject Matter Eligibility," This Notice updated the USPTO guidelines for the USPTO's procedure for subject matter eligibility under 35 U.S.C. § 101 for claims embracing natural products or natural principles phenomenon. On May 4, 2016, the USPTO released life science examples that were intended to be used in conjunction with the USPTO guidance on subject matter eligibility. Although the guidelines and examples do not have the force of law, patent examiners have been instructed to follow them. On February 6, 2019, the Federal Circuit for Court of Appeals issued a decision in *Athena Diagnostics, Inc. v. Mayo Collaborative Servs., LLC*, which relied on the decisions from Mayo and Ariosa, to find a claim directed to a method for diagnosing neurotransmission or developmental disorders related to muscle specific tyrosine kinase not eligible for patenting under 35 U.S.C. § 101. What constitutes a law of nature and a sufficient inventive concept continues to remain uncertain, and it is possible that certain aspects of tests will continue to be considered natural laws and, therefore, ineligible for patent protection.

Some aspects of our technology involve processes that may be subject to this evolving standard and we cannot guarantee that any of our pending or issued claims will be patentable or upheld as valid as a result of such evolving standards. In addition, patents we own or license that issued before these recent cases may be subject to challenge in court or before the USPTO in view of these current legal standards. Accordingly, the evolving interpretation and application of patent laws in the United States governing the eligibility of diagnostics for patent protection may adversely affect our ability to obtain patents and may facilitate third-party challenges to any owned and licensed patents. Changes in either the patent laws or in interpretations and application of patent laws may also diminish the value of our existing intellectual property or intellectual property that we continue to develop. We cannot predict the breadth of claims that may be allowed or enforceable in our patents or in third-party patents.

We may be involved in litigation related to intellectual property, which could be time-intensive and costly and may adversely affect our business, operating results or financial condition.

We may receive notices of claims of direct or indirect infringement or misappropriation or misuse of other parties' proprietary rights from time to time and some of these claims may lead to litigation. We cannot assume that we will prevail in such actions, or that other actions alleging misappropriation or misuse by us of third-party trade secrets, infringement by us of third-party patents and trademarks or other rights, or the validity of our patents, trademarks or other rights, will not be asserted or prosecuted against us. We might not have been the first to make the inventions covered by each of our pending patent applications and we might not have been the first to file patent applications for these inventions. No assurance can be given that other patent applications will not have priority over our patent applications. If third parties bring these proceedings against our patents, we could incur significant costs and experience management distraction. Litigation may be necessary for us to enforce our patents and proprietary rights or to determine the scope, coverage and validity of the proprietary rights of others. Defending any litigation, and particularly patent litigation, is expensive and time-consuming, and the outcome of any litigation or other proceeding is inherently uncertain and might not be favorable to us. It is also possible that we might not be able to obtain licenses to technology that we require on acceptable terms or at all. In addition, if we resort to legal proceedings to enforce our intellectual property rights or to determine the validity, scope and coverage of the intellectual property or other proprietary rights of others, the proceedings could be burdensome and expensive, even if we were to prevail. Any litigation that may be necessary in the future could result in substantial costs and diversion of resources and could have a material adverse effect on our business, financial condition and operating results.

In the event of a successful claim of infringement against us, we may be required to pay damages and ongoing royalties, and obtain one or more licenses from third parties, or be prohibited from selling our products. We may not be able to obtain these licenses on acceptable terms, if at all. We could incur substantial costs related to royalty payments for licenses obtained from third parties, which could negatively affect our financial results. In addition, our agreements with some of our customers, suppliers or other entities with whom we do business require us to defend or indemnify these parties to the extent they become involved in infringement claims, including the types of claims described above. If we are required or agree to defend or indemnify third parties in connection with any infringement claims, we could incur significant costs and expenses that could have a material adverse effect on our business, financial condition, and results of operations.

Other Risks Related to our Business

Our ability to use our net operating loss carryforwards may be limited and may result in increased future tax liability to us.

We have incurred net losses since 2015 and may never achieve or sustain profitability. As of the fiscal year ended December 31, 2019, we had U.S. federal and state net operating losses, or NOLs, of approximately $210.1 million and $92.2 million, respectively. Subject to the final two sentences of this paragraph, the federal and state NOL carryforwards will begin to expire, if not utilized, beginning in 2028. These NOL carryforwards could expire unused and be unavailable to offset future income tax liabilities. Under current federal income tax law, federal NOLs incurred in tax years beginning after December 31, 2017 may be carried forward indefinitely, but the deductibility of such federal NOLs is limited to 80% of Federal taxable income.

To the extent that we continue to generate taxable losses, unused losses will carry forward to offset future taxable income, if any. We may be limited in the portion of NOL and tax credit carryforwards that we can use in the future to offset taxable income for U.S. federal and state income tax purposes. Sections 382 and 383 of Internal Revenue Code limit the use of NOLs and tax credits after a cumulative change in corporate ownership of more than 50% occurs within a three-year period. The limitation could prevent us from using some or all of our NOLs and tax credits, as it places a formula limit of how much of our NOL and tax credit carryforwards we would be permitted to use in a tax year. The amount of the annual limitation, if any, will be determined based on the value of our company immediately prior to an ownership change. During the periods 2017 through 2019, the company experienced greater than 50% changes in ownership. Subsequent ownership changes may further affect the limitation in future years. In the event we have undergone or will undergo an ownership change under Section 382 of the Internal Revenue Code, if we earn net taxable income, our ability to use our pre-change NOL carryforwards to offset U.S. federal taxable income may become subject to these limitations, which could potentially result in increased future tax liability to us.

Comprehensive tax reform could adversely affect our business and financial condition.

The U.S. government enacted comprehensive tax legislation, commonly referred to as the Tax Cuts and Jobs Act of 2017 (the "TCJA"), that includes significant changes to the taxation of business entities. These changes include, among others, (i) a permanent reduction to the corporate income tax rate, (ii) a partial limitation on the deductibility of business interest expense, (iii) a shift of the U.S. taxation of multinational corporations from a tax on worldwide income to a territorial system (along with certain rules designed to prevent erosion of the U.S. income tax base) and (iv) a one-time tax on accumulated offshore earnings held in cash and illiquid assets, with the latter taxed at a lower rate. Notwithstanding the reduction in the corporate income tax rate, the overall impact of this tax reform is uncertain, and our business and financial condition could be adversely affected. In addition, it is uncertain if and to what extent various states will conform to the newly enacted federal tax law.

The TCJA reduced the U.S. corporate income tax rate from 35% to 21%, effective January 1, 2018. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to reverse. As a result of the reduction in the U.S. corporate income tax rate from 35% to 21% under the TCJA, we revalued deferred tax assets, net as of December 31, 2017. The tax impact of revaluation of the deferred tax assets, net was $22,768,303, which was wholly offset by a corresponding reduction in our valuation allowance of $22,768,303 resulting in a no net impact to our income tax expense.

The TCJA provided for a one-time transition tax on the deemed repatriation of post-1986 undistributed foreign subsidiary earnings and profits. The Company did not have consolidated accumulated earnings and profits attributable to it foreign subsidiaries, accordingly, the Company did not record any income tax expense related to the transition tax. Due to the timing of the new tax law and the substantial changes it brings, the staff of the Securities and Exchange Commission (the "SEC") issued Staff Accounting Bulletin No. 118 ("SAB 118"), which provides registrants a measurement period to report the impact of the new US tax law. During the measurement period, provisional amounts for the effects of the law are recorded to the extent a reasonable estimate can be made. To the extent that all information necessary is not available, prepared or analyzed, companies may recognize provisional estimated amounts for a period of up to one year following enactment of the TCJA. The Company did not record any provisional amounts under SAB 118.

Changes in financial accounting standards or practices may cause adverse, unexpected financial reporting fluctuations and affect our reported operating results.

U.S. generally accepted accounting principles ("GAAP") is subject to interpretation by the FASB, the SEC, and various bodies formed to promulgate and interpret appropriate accounting principles. A change in accounting standards or practices can have a significant effect on our reported results and may even affect our reporting of transactions completed before the change is effective. New accounting pronouncements and varying interpretations of accounting pronouncements have occurred and may occur in the future. Changes to existing rules or the questioning of current practices may adversely affect our reported financial results or the way we conduct our business. For example, the FASB and the International Accounting Standards Board are working to converge certain accounting principles and facilitate more comparable financial reporting between companies that are required to follow U.S. GAAP and those that are required to follow International Financial Reporting Standards, or IFRS.

If we do not increase our revenues and successfully manage the size of our operations, our business, financial condition and results of operations could be materially and adversely affected.

The majority of our operating expenses are personnel-related costs such as employee compensation and benefits, reagents and disposable supplies as well as the cost of infrastructure to support our operations, including facility space and equipment. We continuously review our personnel to determine whether we are fully utilizing their services. If we believe we are not in a position to fully utilize our personnel, we may make reductions to our workforce. If we are unable to achieve revenue growth in the future or fail to adjust our cost infrastructure to the appropriate level to support our revenues, our business, financial condition and results of operations could be materially and adversely affected.

We may acquire businesses or assets or make investments in other companies or testing, service or solution 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 strategy, we may pursue acquisitions of synergistic businesses or other related assets. If we make any further 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 acquisition by us also could result in significant write-offs or the incurrence of debt and contingent liabilities, any of which could harm our operating results and financial condition. Integration of an acquired company or business will also likely require management resources that otherwise would be available for ongoing development of our existing business. 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. To finance any acquisitions or investments, 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 for stock. Alternatively, it may be necessary for us to raise additional funds for these activities through public or private financings. Additional funds may not be available on terms that are favorable to us, or at all. If these funds are raised through the sale of equity or convertible debt securities, dilution to our stockholders could result. Consummating an acquisition poses a number of risks including:

- we may not be able to accurately estimate the financial impact of an acquisition on our overall business;
- an acquisition may require us to incur debt or other obligations, incur large and immediate write-offs, issue capital stock potentially dilutive to our stockholders or spend significant cash, or may negatively affect our operating results and financial condition;
- if we spend significant funds or incur additional debt or other obligations, our ability to obtain financing for working capital or other purposes could decline;
- worse than expected performance of an acquired business may result in the impairment of intangible assets;
- we may be unable to realize the anticipated benefits and synergies from acquisitions as a result of inherent risks and uncertainties, including difficulties integrating acquired businesses or retaining key personnel, partners, customers or other key relationships, and risks that acquired entities may not operate profitably or that acquisitions may not result in improved operating performance;
- we may fail to successfully manage relationships with customers, distributors and suppliers;
- our customers may not accept new molecular diagnostic tests or pharma services from our acquired businesses;
- we may fail to effectively coordinate sales and marketing efforts of our acquired businesses;
- we may fail to combine product offerings and product lines of our acquired businesses timely and efficiently;
- an acquisition may involve unexpected costs or liabilities, including as a result of pending and future shareholder lawsuits relating to acquisitions or exercise by stockholders of their statutory appraisal rights, or the effects of purchase accounting may be different from our expectations;
- an acquisition may involve significant contingent payments that may adversely affect our future liquidity or capital resources;

- accounting for contingent payments requires significant judgment and changes to the assumptions used in determining the fair value of our contingent payments could lead to significant volatility in earnings;
- acquisitions and subsequent integration of these companies may disrupt our business and distract our management from other responsibilities; and
- the costs of an unsuccessful acquisition may adversely affect our financial performance.

Additional risks of integration of an acquired business include:

- differing information technology, internal control, financial reporting and record-keeping systems;
- differences in accounting policies and procedures;
- unanticipated additional transaction and integration-related costs;
- facilities or operations of acquired businesses in remote locations and the inherent risks of operating in unfamiliar legal and regulatory environments; and
- new products, including the risk that any underlying intellectual property associated with such products may not have been adequately protected or that such products may infringe on the proprietary rights of others.

If our information technology or communications systems fail or we experience a significant interruption in their operation, our reputation, business and results of operations could be materially and adversely affected.

The efficient operation of our business is dependent on our information technology and communications systems. Increasingly, we are also dependent upon our ability to electronically interface with our customers. The failure of these systems to operate as anticipated could disrupt our business and result in decreased revenue and increased overhead costs. In addition, we do not have complete redundancy for all of our systems and our disaster recovery planning cannot account for all eventualities. Our information technology and communications systems, including the information technology systems and services that are maintained by third party vendors, are vulnerable to damage or interruption from natural disasters, fire, terrorist attacks, epidemics, pandemics including the COVID-19, malicious attacks by computer viruses or hackers, power loss, failure of computer systems, Internet, telecommunications or data networks. In 2017, we discovered malware installed on certain clinical services servers. We do not believe that any data on the affected servers was accessed or compromised. We removed the malware, and enhanced our cybersecurity procedures. Additionally, our clinical services and pharma services are largely dependent on our partially internally developed and partially purchased Laboratory Information Management Systems or LIMS, which is our automated basis of managing operations and storing data and customer information. If these systems or services become unavailable or suffer a security breach, or are uneconomical or impossible to update and modify, we may expend significant resources to address these problems, and our reputation, business and results of operations could be materially and adversely affected.

We have and may continue to experience intangible asset impairment charges.

We are required to evaluate the carrying value of intangibles at least annually, and between annual tests if events or circumstances warrant such a test. We review the recoverability of long-lived assets and finite-lived intangible assets whenever events or changes in circumstances indicate that the carrying value of such assets may not be recoverable. If the sum of the expected future undiscounted cash flows is less than the carrying amount of the asset, an impairment loss is recognized by reducing the recorded value of the asset to its fair value measured by future discounted cash flows. This analysis requires estimates of the amount and timing of projected cash flows and, where applicable, judgments associated with, among other factors, the appropriate discount rate. Such estimates are critical in determining whether any impairment charge should be recorded and the amount of such charge if an impairment loss is deemed to be necessary. Writing down or reserving for other intangible assets or impairments would have a negative and unexpected impact on our net worth and could, among other things, affect our ability to maintain our Nasdaq listing on a longer term basis.

Risks Related To Our Common Stock Price

The price and trading volume of our common stock may be highly volatile and could be further affected by events not within our control, and an investment in our common stock could suffer a decline in value.

During 2019, our common stock traded at a low of $3.80 and a high of $11.20 (adjusted for reverse stock split). During 2018, our common stock traded at a low of $7.60 and a high of $17.80 (adjusted for reverse stock split). Volatility in our stock price or trading volume may be in response to various factors, some of which may be beyond our control. In addition to the other factors discussed or incorporated by reference herein, factors that may cause fluctuations in our stock price or trading volume, include, among others:

- general volatility in the trading markets;
- adverse research and development results;
- significant fluctuations in our quarterly operating results;
- significant changes in our cash and cash equivalent reserves;
- our liquidity and ability to obtain additional capital, including the market's reaction to any announced capital-raising transactions;
- market assessments of any announced strategic transaction, including the likelihood that it would be completed and the timing for completion;
- potential negative market reaction to the terms or volume of any issuance of shares of our common stock, preferred stock or other securities to new investors, pursuant to strategic or capital-raising transactions or to employees, directors or other service providers;
- sales of substantial amounts of our common stock, or the perception that substantial amounts of our common stock may be sold, by stockholders in the public market;
- announcements regarding our business or the business of our competitors;
- announcements regarding our equity offerings;
- strategic actions by us or our competitors, such as acquisitions or restructurings;
- industry and/or regulatory developments;
- changes in revenue mix;
- changes in revenue and revenue growth rates for us and for the industries in which we operate;
- changes in accounting standards, policies, guidance, interpretations or principles;
- statements or changes in opinions, ratings or earnings estimates made, or the failure to make, by brokerage firms or industry analysts relating to the markets in which we operate or expect to operate; and
- general market and economic conditions.

Stock price dilution.

The issuance of additional shares of our common stock in any future offerings could be dilutive to stockholders. In order to raise additional capital, such securities may be at prices that are not the same as the price per share in previous offerings. We cannot assure investors that we will be able to sell shares or other securities in any other offering at a price per share that is equal to or greater than the price per share paid by investors in previous offerings, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders,. Moreover, to the extent that we issue options or warrants to purchase, or securities convertible into or exchangeable for, shares of our common stock in the future, (including our Series B Preferred Stock) and those options, warrants or other securities are exercised, converted or exchanged, stockholders may experience further dilution.

We may be unable to meet Nasdaq listing requirements.

On April 18, 2019, Nasdaq notified us that that, for the previous thirty consecutive business days, the bid price for the Company's common stock had closed below the minimum $1.00 per share requirement for continued listing on The Nasdaq Capital Market under Nasdaq Listing Rule 5550(a)(2). On January 30, 2020, we received notice from Nasdaq stating that regained compliance with the minimum bid price requirement and that the matter was now closed.

There can be no assurance however that we will be able to maintain compliance with the Nasdaq continued listing requirements, or that our common stock will not be delisted from Nasdaq in the future. If our common stock is delisted by Nasdaq, it could lead to a number of negative implications, including an adverse effect on the price of our common stock, increased volatility in our common stock, reduced liquidity in our common stock, the loss of federal preemption of state securities laws and greater difficulty in obtaining financing. In addition, delisting of our common stock could deter broker-dealers from making a market in or otherwise seeking or generating interest in our common stock, could result in a loss of current or future coverage by certain sell-side analysts and might deter certain institutions and persons from investing in our securities at all. Delisting could also cause a loss of confidence of our customers, collaborators, vendors, suppliers and employees, which could harm our business and future prospects.

If our common stock is delisted by Nasdaq in the future, our common stock may be eligible to trade on the OTC Bulletin Board, OTCQB or another over-the-counter market. Any such alternative would likely result in it being more difficult for us to raise additional capital through the public or private sale of equity securities and for investors to dispose of or obtain accurate quotations as to the market value of, our common stock. In addition, there can be no assurance that our common stock would be eligible for trading on any such alternative exchange or markets. For these reasons and others, delisting could adversely affect the price of our securities and our business, financial condition and results of operations.

Risks Related To Being a Public Company

We will continue to incur increased costs and demands on management as a result of compliance with laws and regulations applicable to public companies, which could harm our operating results.

As a public company, we will continue to incur significant legal, accounting, consulting and other expenses, including costs associated with public company reporting requirements. In addition, the Sarbanes-Oxley Act of 2002 and the Dodd-Frank Act of 2010, as well as rules implemented by the SEC, and Nasdaq, impose a number of requirements on public companies, including with respect to corporate governance practices. Our management and other personnel will need to devote a substantial amount of time and resources to these compliance and disclosure obligations. Moreover, these rules and regulations have and will continue to increase our legal, accounting and financial compliance costs and make some activities more complex, time-consuming and costly. We also expect that it will continue to be expensive for us to maintain director and officer liability insurance.

If we are unable to maintain and implement effective internal controls over financial reporting, investors may lose confidence in the accuracy and completeness of our reported financial information and the market price of our common stock may be negatively affected.

As a public company, we are required to maintain internal control over financial reporting and to report any material weaknesses in such internal control. Section 404 of the Sarbanes-Oxley Act of 2002 requires that we evaluate and determine the effectiveness of our internal control over financial reporting and provide a management report on our internal controls on an annual basis. If we have material weaknesses in our internal control over financial reporting, we may not detect errors on a timely basis and our financial statements may be materially misstated. We have only recently compiled the systems, processes and documentation necessary to comply with Section 404 of the Sarbanes-Oxley Act. We will need to maintain and enhance these processes and controls as we grow, and we will require additional management and staff resources to do so. Additionally, even if we conclude our internal controls are effective for a given period, we may in the future identify one or more material weaknesses in our internal controls, in which case our management will be unable to conclude that our internal control over financial reporting is effective. Even if our management concludes that our internal control over financial reporting is effective, our independent registered public accounting firm may conclude that there are material weaknesses with respect to our internal controls or the level at which our internal controls are documented, designed, implemented or reviewed.

If we are unable to conclude that our internal control over financial reporting is effective, or if our auditors were to express an adverse opinion on the effectiveness of our internal control over financial reporting because we had one or more material weaknesses, investors could lose confidence in the accuracy and completeness of our financial disclosures, which could cause the price of our common stock to decline. Irrespective of compliance with Section 404, any failure of our internal control over financial reporting could have a material adverse effect on our reported operating results and harm our reputation. Internal control deficiencies could also result in a restatement of our financial results.

Risks Relating to Our Corporate Structure and Our Common Stock

We have a substantial number of authorized common and preferred shares available for future issuance that could cause dilution of our stockholders' interest, adversely impact the rights of holders of our common stock and cause our stock price to decline.

We have a total of 100,000,000 shares of common stock and 5,000,000 shares of preferred stock authorized for issuance. As of March 20, 2020 we had 95,944,546 shares of common stock and 4,953,000 shares of preferred stock available for issuance. As of March 20, 2020, we have reserved 601,130 shares of our common stock for issuance under our 2019 Equity Incentive Plan and 100,000 shares of our common stock for issuance under our Employee Stock Purchase Plan and 106,832 additional shares available for future grants of awards under our stock incentive plan as well as warrants for 1,419,648 shares of our common stock outstanding at prices ranging from $9.40 to $46.90 per warrant share. Provided that we have a sufficient number of unreserved authorized capital stock available, we may seek financing that could result in the issuance of additional shares of our capital stock and/or rights to acquire additional shares of our capital stock. We may also make acquisitions that result in issuances of additional shares of our capital stock. Those additional issuances of capital stock could result in substantial dilution of our existing stockholders. Furthermore, the book value per share of our common stock may be reduced. This reduction would occur if the exercise price of any issued warrants, the conversion price of any convertible notes or the conversion ratio of any issued preferred stock is lower than the book value per share of our common stock at the time of such exercise or conversion. Additionally, new investors in any subsequent issuances of our securities could gain rights, preferences and privileges senior to those of holders of common stock.

The addition of a substantial number of shares of our common stock into the market or the registration of any of our other securities under the Securities Act may significantly and negatively affect the prevailing market price for our common stock. The future sales of shares of our common stock issuable upon the exercise of outstanding warrants and options may have a depressive effect on the market price of our common stock, as such warrants and options would be more likely to be exercised at a time when the price of our common stock is greater than the exercise price.

Any weakness in our disclosure controls and procedures and our internal controls could have a material adverse effect on us.

We cannot assure you that additional material weaknesses will not be identified in the future. Any such failure could adversely affect our ability to report financial results on a timely and accurate basis, which could have other material effects on our business, reputation, results of operations, financial condition or liquidity. Potential material weaknesses in internal controls over financial reporting or disclosure controls and procedures could also cause investors to lose confidence in our reported financial information which could have an adverse effect on the trading price of our securities.

We have anti-takeover defenses that could delay or prevent an acquisition and could adversely affect the price of our common stock.

Our certificate of incorporation, as amended, and amended and restated bylaws include provisions, such as providing for three classes of directors, which may make it more difficult to remove our directors and management and may adversely affect the price of our common stock. In addition, our certificate of incorporation, as amended, authorizes the issuance of "blank check" preferred stock, which allows our Board to create one or more classes of preferred stock with rights and preferences greater than those afforded to the holders of our common stock without separate shareholder approval. This provision could have the effect of delaying, deterring or preventing a future takeover or a change in control, unless the takeover or change in control is approved by our Board. We are also subject to laws that may have a similar effect. For example, Section 203 of the General Corporation Law of the State of Delaware prohibits us from engaging in a business combination with an interested stockholder for a period of three years from the date the person became an interested stockholder unless certain conditions are met. As a result of the foregoing, it will be difficult for another company to acquire us and, therefore, could limit the price that possible investors might be willing to pay in the future for shares of our common stock. In addition, the rights of our common stockholders are subject to, and may be adversely affected by, the rights of holders of our Series B Preferred Stock as well as any class or series of preferred stock that may be issued in the future and by the rights of holders of warrants currently outstanding or issued in the future.

We have not declared any cash dividends on our common stock and do not intend to declare or pay any cash dividends in the foreseeable future. Future earnings, if any, will be used to finance the future operation and growth of our business. As a result, capital appreciation, if any, will be your sole source of gain.

We have never paid cash dividends on our common stock. We do not currently anticipate paying cash dividends on our common stock in the foreseeable future and we may not have sufficient funds legally available to pay dividends. Even if the funds are legally available for distribution, the SVB Loan Agreement contains restrictive covenants that prohibit us from paying cash dividends on our common stock. In addition, we are prohibited from paying dividends on our common stock without the approval of the holders of the Series B Preferred Stock for so long as 30% of the Series B Preferred Stock outstanding as of January 15, 2020 remains outstanding. We presently intend to retain all earnings for our operations. As a result, capital appreciation, if any, of our common stock will be an investor's sole source of gain for the foreseeable future.

If securities or industry analysts issue an adverse opinion regarding our stock or do not publish research or reports about our company, our stock price and trading volume could decline.

The trading market for our common stock will depend in part on the research and reports that equity research analysts publish about us, our business and our competitors. We do not control these analysts or the content and opinions or financial models included in their reports. Securities analysts may elect not to provide research coverage of our company, and such lack of research coverage may adversely affect the market price of our common stock. The price of our common stock could also decline if one or more equity research analysts downgrade our common stock or if those analysts issue other unfavorable commentary or cease publishing reports about us or our business. If one or more equity research analysts cease coverage of our company, we could lose visibility in the market, which in turn could cause our stock price to decline.

We may be subject to securities litigation, which is expensive and could divert our management's attention.

The market price of our securities may be volatile, and in the past companies that have experienced volatility in the market price of their securities have been subject to securities class action litigation. We may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management's attention from other business concerns, which could seriously harm our business.

The indemnification rights provided to our directors, officers and employees may result in substantial expenditures by us and may discourage lawsuits against its directors, officers, and employees.

Our certificate of incorporation, as amended, contains provisions permitting us to enter into indemnification agreements with our directors, officers, and employees. The foregoing indemnification obligations could result in us incurring substantial expenditures to cover the cost of settlement or damage awards against directors and officers, which we may be unable to recoup. These provisions and resultant costs may also discourage us from bringing a lawsuit against our directors and officers for breaches of their fiduciary duties and may similarly discourage the filing of derivative litigation by our stockholders against our directors and officers even though such actions, if successful, might otherwise benefit us and our stockholders.

The effective increase in the number of shares of our common stock available for issuance as a result of our Reverse Stock Split could result in further dilution to our existing stockholders.

The Reverse Stock Split effected on January 2020 had no effect on our authorized common stock and the total number of authorized shares remained the same as before the Reverse Stock Split. However, the Reverse Stock Split increased the number of shares of our common stock (or securities convertible or exchangeable for our common stock, including our Series B Preferred Stock) available for issuance. The additional available shares are available for issuance from time to time at the discretion of the Board when opportunities arise, without further stockholder action or the related delays and expenses, except as may be required for a particular transaction by law, the rules of any exchange on which our securities may then be listed, or other agreements or restrictions. Any issuance of additional shares of our common stock would increase the number of outstanding shares of our common stock and (unless such issuance was pro-rata among existing stockholders) the percentage ownership of existing stockholders would be diluted accordingly. In addition, any such issuance of additional shares of our common stock could have the effect of diluting the earnings per share and book value per share of outstanding shares of our common stock.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our corporate headquarters are located in Parsippany, New Jersey where we lease approximately 6,000 square feet. The lease runs through September 2022. Our diagnostic laboratory facilities are located in Pittsburgh, Pennsylvania and New Haven, Connecticut, where we lease a total of approximately 21,400 square feet combined. Our Pittsburgh, Pennsylvania lease runs through June 30, 2023. Our New Haven, Connecticut lease is a one year term that runs through December 2020. Our pharma services laboratory facilities are located in Rutherford, New Jersey and in Research Triangle Park (RTP) in Morrisville, North Carolina where we lease approximately 17,900 and 24,900 square feet, respectively. With respect to the Rutherford lease, the Company has delivered a notice of early termination which would terminate the lease in March 2021. The Morrisville lease runs through May 2020.

Accordingly, we believe that our current facilities are adequate for our current and foreseeable operations and that suitable additional space will be available if needed.

ITEM 3. LEGAL PROCEEDINGS

We are not currently a party to any material legal proceedings. We may from time to time become involved in legal proceedings arising in the ordinary course of business.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR OUR COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Market Information

Our common stock is listed on The Nasdaq Capital Market under the symbol “IDXG.”

Reverse Stock Split

On January 15, 2020, we effected a one-for-ten reverse split of our issued and outstanding shares of our common stock. At the effective time of the reverse split, every 10 shares of common stock issued and outstanding were automatically combined into one share of issued and outstanding common stock, without any change in the par value per share. Our common stock began trading on The Nasdaq Capital Market on a reverse stock split-adjusted basis on January 15, 2020. There was no change in our ticker symbol as a result of the reverse stock split.

Holders of Record

We had 147 stockholders of record as of March 20, 2020. Not reflected in the number of stockholders of record are persons who beneficially own shares of common stock held in nominee or street name.

Dividends

We have not declared any cash dividends and do not intend to declare or pay any cash dividends in the foreseeable future. Future earnings, if any, will be used to finance the future operation and growth of our businesses.

Recent Sales of Unregistered Securities

On May 31, 2019, the Company issued 10,000 shares (as adjusted for the reverse stock split) of common stock in consideration of services to be rendered in the extension of a consulting agreement it entered into during the quarter ended June 30, 2019. The issuances were exempt from registration pursuant to the Securities Act of 1933, as amended, pursuant to Section 4(a)(2) thereof.

ITEM 6. SELECTED FINANCIAL DATA

We are a "smaller reporting company" for purposes of the disclosure requirements of Item 301 of Regulation S-K and, therefore, we are not required to provide this information.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following Management's Discussion and Analysis of Financial Condition and Results of Operations should be read in conjunction with our consolidated financial statements and the related notes appearing elsewhere in this Annual Report on Form 10-K. *This discussion and analysis includes certain forward-looking statements that involve risks, uncertainties and assumptions. You should review the Risk Factors section of this Form 10-K for a discussion of important factors that could cause actual results to differ materially from the results described in or implied by such forward-looking statements. See Cautionary Note Regarding Forward-Looking Information at the beginning of this Form 10-K.*

Company Overview

We are an emerging leader in enabling precision medicine principally in oncology by offering specialized services along the therapeutic value chain from early diagnosis and prognostic planning to targeted therapeutic applications through our clinical services and pharma services. Through our clinical services, we enable physicians to personalize the clinical management of each individual patient by providing genomic information to better diagnose, monitor and inform cancer treatment. Our clinical services provide clinically useful molecular diagnostic tests, bioinformatics and pathology services for evaluating risk of cancer by leveraging the latest technology in personalized medicine for improved patient diagnosis and management. Through our pharma services, we develop, commercialize and provide molecular- and biomarker-based tests and services and provide companies with customized solutions for patient stratification and treatment selection through an extensive suite of molecular and biomarker-based testing services, DNA- and RNA- extraction and customized assay development and trial design consultation. Our pharma services, which we acquired in July 2019, provide pharmacogenomics testing, genotyping, biorepository and other specialized services to the pharmaceutical and biotech industries and advances personalized medicine by partnering with pharmaceutical, academic and technology leaders to effectively integrate pharmacogenomics into drug development and clinical trial programs with the goals of delivering safer, more effective drugs to market more quickly, and improving patient care.

During fiscal 2019, we acquired the BioPharma Business of Cancer Genetics in July 2019 for approximately $23 million and raised $27 million with Ampersand, a diagnostic laboratory private equity investor. This was followed by raising an additional $20 million in early 2020 led by 1315 Capital, another sophisticated private equity investor. We believe that the combination of our clinical services and acquired pharma services uniquely positions us for growth and expansion in the fast-growing biopharma sector where we can provide our unique diagnostic capabilities to a broad customer base.

As of April 2020, we are in the process of launching a new product line of antibody testing for the COVID-19 virus. We are currently validating a serological, or antibody, test that measures the amount of antibodies present in the blood. In response to an infection, such as COVID-19, the body develops an overall immune response to fight the infection. One component of the immune system's response is the development of antibodies that attach to the virus and help eliminate it. Antibody tests detect the body's immune response to the infection caused by the virus rather than detecting the virus itself. The FDA has issued guidance allowing companies to market serological tests that have been validated following notification to FDA. Validated antibody tests offered under the policy should, among other things, include in test reports language explaining that negative results do not rule out COVID-19 infection and that follow-up testing with a molecular diagnostic should be considered to rule out infection. There is no guarantee that we will be successful in completing development or realize any revenue or benefit from these efforts.

Clinical services

Our clinical services provide clinically useful molecular diagnostic tests, bioinformatics and pathology services for evaluating cancer risk by leveraging the latest technology in personalized medicine for improved patient diagnosis and management. We develop and commercialize genomic tests and related first line assays principally focused on early detection of patients with indeterminate biopsies and at high risk of cancer using the latest technology to help personalized medicine and improve patient diagnosis and management. Our tests and services provide mutational analysis of genomic material contained in suspicious cysts, nodules and lesions with the goal of better informing treatment decisions in patients at risk of thyroid, pancreatic, and other cancers. The laboratory developed molecular diagnostic tests we offer are designed to enable healthcare providers to better assess cancer risk, helping to avoid unnecessary surgical treatment in patients at low risk. We currently have four commercialized molecular diagnostic tests in the marketplace: PancraGEN®, which is a pancreatic cyst and pancreaticobiliary solid lesion genomic test that helps physicians better assess risk of pancreaticobiliary cancers using our proprietary PathFinderTG® platform; ThyGeNEXT®, which is an expanded oncogenic mutation panel that helps identify malignant thyroid nodules; ThyraMIR®, which assesses thyroid nodules for risk of malignancy utilizing a proprietary microRNA gene expression assay; and RespriDx®, which is a genomic test that helps physicians differentiate metastatic or recurrent lung cancer from the presence of newly formed primary lung cancer and which also utilizes our PathFinderTG® platform to compare the genomic fingerprint of two or more sites of lung cancer. BarreGEN®, an esophageal cancer risk classifier for Barrett's Esophagus that also utilizes our PathFinder TG® platform, is currently in a Clinical Evaluation Program or "CEP" whereby we gather information from physicians using BarreGEN® to assist us in positioning our product for full launch, partnering and potentially supporting reimbursement with payers.

Our mission is to provide personalized medicine through genomics-based diagnostics and innovation to advance patient care based on rigorous science. Our laboratories are licensed pursuant to federal law under CLIA and are accredited by CAP and New York State. In August 2018, we acquired a majority of the Philadelphia laboratory equipment of Rosetta Genomics, Inc., in order to service certain former Rosetta thyroid customers and to further support our CLIA and CAP certified lab expansion in our New Haven, Connecticut and Pittsburgh, Pennsylvania laboratories.

We leverage our laboratories to develop and commercialize our assays and products. We aim to provide physicians and patients with diagnostic options for detecting genomic and other molecular alterations that are associated with gastrointestinal, endocrine, and lung cancers. Our customers consist primarily of physicians, hospitals and clinics.

The global molecular diagnostics market is estimated to be approximately $8.7 billion in 2019 and is a segment within the estimated $69.2 billion in vitro diagnostics market in 2019 according to statistics from Kalorama Information, publisher of *the Worldwide Market for In Vitro Diagnostic Tests.*

We believe that the molecular diagnostics market offers significant growth and strong patient value given the substantial opportunity it affords to lower healthcare costs by helping to reduce unnecessary surgeries and ensuring the appropriate frequency of monitoring. We are keenly focused on growing our test volumes, securing additional insurance coverage and reimbursement, maintaining and growing our current reimbursement and supporting revenue growth for our molecular diagnostic tests, introducing related first line product and service extensions, as well as expanding our business by developing and promoting synergistic products in our markets. We also believe that BarreGEN® is a potentially significant pipeline product, and we are providing necessary resources to accelerate our development process. Further, we believe BarreGEN® is synergistic with our capabilities in the gastrointestinal market, which is one of the sectors in which we operate.

Pharma services

Our pharma services provide pharmacogenomics testing, genotyping, biorepository and other specialized services to the pharmaceutical and biotech industries. Laboratory and testing services are performed for participants in the pharmaceutical and biotech industries engaged in clinical trials and focuses on providing these clients with oncology specific and non-oncology genetic testing services for phase I-IV clinical 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 laboratory developed tests to assist in developing and commercializing drug-specific companion diagnostics. We have established business relationships with key instrument manufacturers to support their platforms in the market, and to drive acceptance among biopharmaceutical sponsors developing innovative immuno-oncology therapies.

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 2019, 48 new drugs were approved by the FDA, and nearly 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 our pharma customers, we custom develop Next Generation Sequencing (NGS) panels for our customers focused on pharmacogenomics and oncology.

We also utilize our laboratories to provide clinical trial services to the pharmaceutical and biotech industries 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. We believe our laboratories are one of a few with the capability to combine somatic and germline mutational analyses in clinical trials. The laboratories operate through CLIA certificated and CAP accredited laboratories located in Rutherford, New Jersey and Raleigh, North Carolina.

Our laboratories possess capabilities in histology, immunohistochemistry (IHC), flow cytometry, cytogenetics and fluorescent in-situ hybridization (FISH), as well as sophisticated molecular analysis techniques, including next generation sequencing. This allows for comprehensive customized testing within one lab enterprise, with our CAP-accredited biorepository laboratory serving as a central hub for specimen tracking. Using this approach, we are able to support demanding clinical trial protocols requiring multiple assays and techniques aimed at capturing data on multiple biomarkers. Our suite of available testing platforms allows for highly customized clinical trial design which is supported by our dedicated group of development scientists and technical personnel.

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.

Recent Notices of Nasdaq Listing Compliance

On April 18, 2019, Nasdaq notified us that that, for the last thirty consecutive business days, the bid price for the Company's common stock had closed below the minimum $1.00 per share requirement for continued listing on The Nasdaq Capital Market under Nasdaq Listing Rule 5550(a)(2). On January 30, 2020, we received notice from Nasdaq stating that we were now in compliance with the minimum bid price requirement and that the matter was now closed.

DESCRIPTION OF REPORTING SEGMENTS

We operate under one segment which is the business of developing and selling diagnostic clinical and pharma services.

CRITICAL ACCOUNTING POLICIES

We prepare our consolidated financial statements in accordance with U.S. generally accepted accounting principles, or ("GAAP"). The preparation of financial statements and related disclosures in conformity with GAAP requires management to make judgments, estimates and assumptions at a specific point in time that affect the amounts reported in our consolidated financial statements and disclosed in the accompanying notes. These assumptions and estimates are inherently uncertain. Outlined below are accounting policies, which are important to our financial position and results of operations and require our management to make significant judgments in their application. Some of those judgments can be subjective and complex. Management's estimates are based on historical experience, information from third-party professionals, facts and circumstances available at the time and various other assumptions that are believed to be reasonable. Actual results could differ from those estimates. Additionally, changes in estimates could have a material impact on our consolidated results of operations in any one period. For a summary of all of our significant accounting policies, including the accounting policies discussed below, see Note 1, *Nature of Business and Significant Accounting Policies*, to our consolidated financial statements included in this Annual Report on Form 10-K.

Revenue and Cost of Revenue

The Company's revenue is primarily generated from the performance of its proprietary molecular diagnostic tests for its clinical customers and its DNA-based testing services in support of clinical trials for its pharma services customers. The Company's performance obligation is fulfilled upon completion, review and release of test results and subsequent billing to the third-party payer, hospital or service provider, or biopharma companies.

Revenue Recognition

ASC 606 Revenue Recognition

Clinical services derive its revenues from the performance of its proprietary assays or tests. The Company's performance obligation is fulfilled upon completion, review and release of test results to the customer. The Company subsequently bills third-party payers or direct-bill payers for the tests performed. Revenue is recognized based on the estimated transaction price or net realizable value ("NRV"), which is determined based on historical collection rates by each payer category for each proprietary test offered by the Company. To the extent the transaction price includes variable consideration, for all third party and direct-bill payers and proprietary tests, the Company estimates the amount of variable consideration that should be included in the transaction price using the expected value method based on historical experience.

For our clinical services, we regularly review the ultimate amounts received from the third-party and direct-bill payers and related estimated reimbursement rates and adjust the NRV's and related contractual allowances accordingly. If actual collections and related NRV's vary significantly from our estimates, we adjust the estimates of contractual allowances, which would affect net revenue in the period such variances become known.

For our pharma services customers, performance obligations are satisfied at a point in time as the Company processes samples delivered by the customer. Project level activities, including study setup and project management, are satisfied over the life of the contract. Revenues are recognized at a point in time when the test results or other deliverables are reported to the customer.

Deferred Revenue

For our pharma services, project level fee revenue is recognized as deferred revenue and recorded at fair value. It represents payments received in advance of services rendered and is recognized ratably over the life of the contract.

Leases

The Company determines if an arrangement contains a lease in whole or in part at the inception of the contract. Right-of-use ("ROU") assets represent the Company's right to use an underlying asset for the lease term while lease liabilities represent our obligation to make lease payments arising from the lease. All leases with terms greater than twelve months result in the recognition of a ROU asset and a liability at the lease commencement date based on the present value of the lease payments over the lease term. Unless a lease provides all of the information required to determine the implicit interest rate, we use our incremental borrowing rate based on the information available at the commencement date in determining the present value of the lease payments. We use the implicit interest rate in the lease when readily determinable.

Our lease terms include all non-cancelable periods and may include options to extend (or to not terminate) the lease when it is reasonably certain that we will exercise that option. Leases with terms of twelve months or less at the commencement date are expensed on a straight-line basis over the lease term and do not result in the recognition of an asset or liability. See Note 9, *Leases*.

Long-Lived Assets, including Finite-Lived Intangible Assets

We review the recoverability of long-lived assets and finite-lived intangible assets whenever events or changes in circumstances indicate that the carrying value of such assets may not be recoverable. If the sum of the expected future undiscounted cash flows is less than the carrying amount of the asset, an impairment loss is recognized by reducing the recorded value of the asset to its fair value measured by future discounted cash flows. This analysis requires estimates of the amount and timing of projected cash flows and, where applicable, judgments associated with, among other factors, the appropriate discount rate. Such estimates are critical in determining whether any impairment charge should be recorded and the amount of such charge if an impairment loss is deemed to be necessary. We recorded no asset impairment charges in 2019 or 2018.

Contingencies

In the normal course of business, we are subject to various contingencies. Contingencies are recorded in the consolidated financial statements when it is probable that a liability will be incurred and the amount of the loss can be reasonably estimated, or otherwise disclosed, in accordance with ASC 450, Contingencies. Significant judgment is required in both the determination of probability and the determination as to whether a loss is reasonably estimable. In the event we determine that a loss is not probable, but is reasonably possible, and it becomes possible to develop what we believe to be a reasonable range of possible loss, then we will include disclosures related to such matter as appropriate and in compliance with ASC 450. To the extent there is a reasonable possibility that the losses could exceed the amounts already accrued, we will, when applicable, adjust the accrual in the period the determination is made, disclose an estimate of the additional loss or range of loss, indicate that the estimate is immaterial with respect to its financial statements as a whole or, if the amount of such adjustment cannot be reasonably estimated, disclose that an estimate cannot be made. We are currently a party to legal proceedings that are incidental to our business. As required, we have accrued our estimate of the probable costs for the resolution of these claims. These estimates are developed in consultation with outside counsel and are based upon an analysis of potential results, assuming a combination of litigation and settlement strategies. Predicting the outcome of claims and litigation, and estimating related costs and exposures, involves substantial uncertainties that could cause actual costs to vary materially from estimates.

Income Taxes

Income taxes are based on income for financial reporting purposes calculated using our expected annual effective rate and reflect a current tax liability or asset for the estimated taxes payable or recoverable on the current year tax return and expected annual changes in deferred taxes.

We account for income taxes using the asset and liability method. This method requires recognition of deferred tax assets and liabilities for expected future tax consequences of temporary differences that currently exist between tax bases and financial reporting bases of our assets and liabilities based on enacted tax laws and rates. Deferred tax expense (benefit) is the result of changes in the deferred tax asset and liability. A valuation allowance is established, when necessary, to reduce the deferred income tax assets when it is more likely than not that all or a portion of a deferred tax asset will not be realized.

We operate in multiple tax jurisdictions and provide taxes in each jurisdiction where we conduct business and are subject to taxation. The breadth of our operations and the complexity of the various tax laws require assessments of uncertainties and judgments in estimating the ultimate taxes we will pay. The final taxes paid are dependent upon many factors, including negotiations with taxing authorities in various jurisdictions, outcomes of tax litigation and resolution of proposed assessments arising from federal and state audits. We have established estimated liabilities for uncertain federal and state income tax positions. Uncertain tax positions are recognized in the financial statements when it is more likely than not (for example, a likelihood of more than fifty percent) that a position taken or expected to be taken in a tax return would be sustained upon examination by tax authorities that have full knowledge of all relevant information. A recognized tax position is then measured as the largest amount of benefit that is greater than fifty percent likely to be realized upon ultimate settlement. We adjust our accruals for unrecognized tax benefits as facts and circumstances change, such as the progress of a tax audit. We believe that any potential audit adjustments will not have a material adverse effect on our financial condition or liquidity. However, any adjustments made may be material to our consolidated results of operations or cash flows for a reporting period. Penalties and interest, if incurred, would be recorded as a component of current income tax expense. Management plans to commence filing tax clearance certificates in states and related tax jurisdictions in which un-recognized tax benefits attributable to its former operating entities are recorded as long-term liabilities on the accompanying balance sheet. This process can range from 6 to 18 months before the Company receives clearance as to balances, if any, it may owe to a particular state or tax jurisdiction. Upon receipt and acknowledgment from a state or tax jurisdiction, the Company will settle the remaining obligation or reverse the recorded amount owed during the period in which the tax clearance certificate is obtained.

Significant judgment is also required in evaluating the need for and magnitude of appropriate valuation allowances against deferred tax assets. We currently have significant deferred tax assets resulting from net operating loss carryforwards and deductible temporary differences. The realization of these assets is dependent on generating future taxable income. We perform an analysis quarterly to determine whether the expected future income will more likely than not be sufficient to realize the deferred tax assets. Our recent operating results and projections of future income weighed heavily in our overall assessment. The existing and forecasted levels of pretax earnings for financial reporting purposes are not sufficient to generate future taxable income and realize our deferred tax assets and, as a result, we established a full federal and state valuation allowance for the net deferred tax assets at December 31, 2019 and 2018, as we determined that it was more likely than not that these assets would not be realized.

Stock Compensation Costs

The compensation cost associated with the granting of stock-based awards is based on the grant date fair value of the stock award. We recognize the compensation cost, net of estimated forfeitures, over the shorter of the vesting period or the period from the grant date to the date when retirement eligibility is achieved. Forfeitures are initially estimated based on historical information and subsequently updated over the life of the awards to ultimately reflect actual forfeitures. As a result, changes in forfeiture activity can influence the amount of stock compensation cost recognized from period-to-period.

We primarily use the Black-Scholes option pricing model to determine the fair value of stock options and stock-based stock appreciation rights (SARs). The determination of the fair value of stock-based payment awards is made on the date of grant and is affected by our stock price as well as assumptions made regarding a number of complex and subjective variables. These assumptions include: our expected stock price volatility over the term of the awards; actual and projected employee stock option exercise behaviors; the risk-free interest rate; and expected dividend yield.

Changes in the valuation assumptions could result in a significant change to the cost of an individual award. However, the total cost of an award is also a function of the number of awards granted, and as result, we have the ability to manage the cost and value of our equity awards by adjusting the number of awards granted.

Fiscal 2019 Overview

Fiscal 2019 was a transformative year for us as we continued to grow our underlying business, added capabilities to service a new group of customers through the acquisition of the Biopharma business of Cancer Genetics and attracted capital from Ampersand and 1315 Capital in 2020 to support our growth plans. Total net revenue of $24.1 million grew 10% from $21.9 million in 2018 driven by improvements in clinical services and the addition of pharma services.

In 2018, we decided to transition our billings and collections activities to another vendor effective January 2019. Due to the complexity of our third-party payer requirements and the hand-off from our legacy vendor, the transition was delayed until February 2019, which created uncertainty as we were working with our legacy vendor to collect at historical rates while we transitioned to the new vendor. The terminated legacy vendor was unable to collect at the historical rates, and through the third quarter of 2019 we recorded a $3.5 million adjustment for accounts receivable balances recognized in 2018 and expected to be collected in 2019. This adjustment was recorded as a reduction in net revenue in accordance with ASC 606. During the fourth quarter of 2019, we determined that our new billing and collection vendor was not collecting receivables at anticipated acceptable historical rates due to a variety of reasons, including delays in processing denial claims. Accordingly, we recorded an additional $5.2 million adjustment to revenues in the fourth quarter of 2019. While our new vendor is optimistic about collecting a portion of the $5.2 million of open receivables related to this adjustment, we have not yet seen sufficient cash collection improvement to date.

We are working closely with our new billing and collections vendor and believe we have enhanced the overall process, added resources, better aligned resources and have common goals and objectives. We are developing improvement initiatives to increase billing accuracy and timing, reduce the number of denials, and improve the processing time of denials.

Potential Impact of COVID-19 pandemic

We have taken what we believe are all necessary precautions to safeguard our employees from the Coronavirus (COVID-19) pandemic. We are following CDC guidance and local restrictions. All employees who do not work in a lab are currently on a telecommunication work arrangement. Our employees in the lab are wearing what we believe is appropriate protective gear. If an employee tests positive, then we will take necessary and available precautions in the lab to reduce the potential spread of COVID-19, including decontamination and temporary lab closures. There can be no assurance that key employees will not become ill or that we will able to continue to operate our labs. We have furloughed a significant number of employees as a result of reductions in customer demand and we have closed our administrative offices. Our management, finance staff and sales personnel have generally been able to successfully work remotely. Our labs require in-person staffing and as of the date of this report, we have been able to successfully operate our labs though a combination of social distancing and protective equipment.

The extent to which the COVID-19 pandemic impacts our operations will depend on future developments, which are highly uncertain and cannot be predicted at this time, and include the duration, severity and scope of the outbreak and the actions taken to contain or treat the coronavirus outbreak. In particular, the continued spread of the coronavirus globally is adversely affecting global economies and financial markets resulting in an economic downturn which could materially and adversely impact our operations including, without limitation, the functioning of our laboratories, the availability of supplies including reagents, the progress and data collection of our pharma services, customer demand and travel and employee health and availability.

We believe that the COVID-19 pandemic will adversely impact our results of operations, cash flows and financial condition for the first and second quarters of fiscal 2020 and possibly beyond. Our fiscal 2020 first quarter revenue has been impacted by lower than expected clinical service volume throughout March 2020. We believe this has resulted from the temporary reduction in non-essential testing procedures in connection with the COVID-19 pandemic. While we experienced a substantial increase in clinical services revenue compared to the first quarter of 2019, our March 2020 test volume decreased substantially compared to our February 2020 volume. Our pharma services preliminary first quarter revenue increased throughout the first quarter and average daily accessions improved in March 2020 as compared to January and February 2020.

We continue to monitor the rapidly evolving situation and guidance from authorities, including federal, state and local public health authorities and may take additional actions based on their recommendations. In these dynamic circumstances, there may be developments outside our control requiring us to adjust our operating plan.

Currently volume of testing in our clinical services labs has slowed, as noted above, and we believe we have taken the necessary actions to support the lower volume. Our pharma services customers have indicated that there could be a slowdown in clinical trials but thus far volume has not suffered. All of our labs are currently operating and we believe we are appropriately staffed for the volume of work. At this time, we do not anticipate any lab closures beyond temporary work stoppages from time to time to clean and disinfect the labs. To date, we have not lost any of our customer base and we are not aware of any customers with potential bankruptcy or payment issues. Lab supplies including reagents have been secured to mitigate any potential supply chain issues for the foreseeable future and we are not observing any shortages due to supply chain issues. Our third party clinical services billing and collections company has taken steps to continue operations remotely. There have been indications that payer processing may slow down but so far there has been little or no material impact to our collections**.** As of April 21, 2020 we have approximately $18.4 million of cash on hand which includes $3.4 million drawn on our credit facility, $2.1 million in advances received under the Centers for Medicare & Medicaid Services (CMS) accelerated and advance payment program, and $0.65 million in the form of a grant received from the Department of Health and Human Services, which is subject to certain conditions regarding its use, including developing coronavirus and serology tests. Also as of April 21, 2020, the Company has maximized its borrowing under its line of credit facility and therefore has no further availability on its credit facility; however, we are in the process of seeking to expand availability under the credit facility from $4.0 to $8.0 million on terms similar to existing terms, but there can be no assurance that such credit line extension will be granted or that it will be granted on commercially reasonable and acceptable terms. As of the date of this report, the Company believes it will be able to access additional financing though commercial bank loans and the sale of its securities, although there can no assurance that financing market conditions will not change or that such financing can be obtained. It is anticipated that if business conditions remain at these lower levels for clinical services customers and our pharma services customers similarly reduce their demand until the end of July and thereafter demand recovers to pre COVID-19 pandemic levels, then we believe we will have ample resources to continue to service our customers. However, should business conditions deteriorate further or last longer than anticipated, then our business may be materially and adversely affected.

The Company’s leadership team is monitoring the situation on a daily basis and has developed contingency plans to potentially mitigate the anticipated adverse financial impact of the COVID-19 pandemic. These contingency plans include significant cost saving actions to offset any volume shortfall and additional action plans to react to further potential declines.

As of April 2020, we are in the process of launching a new product line of antibody testing for the COVID-19 virus. We are currently validating a serological, or antibody, test that measures the amount of antibodies present in the blood. In response to an infection, such as COVID-19, the body develops an overall immune response to fight the infection. One component of the immune system's response is the development of antibodies that attach to the virus and help eliminate it. Antibody tests detect the body's immune response to the infection caused by the virus rather than detecting the virus itself. The FDA has issued guidance allowing companies to market serological tests that have been validated following notification to FDA. Validated antibody tests offered under the policy should, among other things, include in test reports language explaining that negative results do not rule out COVID-19 infection and that follow-up testing with a molecular diagnostic should be considered to rule out infection. There is no guarantee that we will be successful in completing development or realize any revenue or benefit from these efforts.

CONSOLIDATED RESULTS OF OPERATIONS

The following table sets forth the selected statements of operations data ($ in thousands) as a percentage of revenue for the periods indicated. The trends illustrated in this table may not be indicative of future operating results.

	Years Ended December 31,			
	2019	2019	2018	2018
Revenue, net	$ 24,079	100.0%	$ 21,896	100.0%
Cost of revenue	15,888	66.0%	10,197	46.6%
Gross profit	8,191	34.0%	11,699	53.4%
Operating expenses:				
Sales and marketing	11,116	46.2%	8,421	38.5%
Research and development	2,810	11.7%	2,124	9.7%
General and administrative	14,546	60.4%	8,499	38.8%
Acquisition related expense	2,534	10.5%	-	0.0%
Acquisition related amortization expense	3,652	15.2%	3,252	14.9%
Change in fair value of contingent consideration	(44)	-0.2%	1,522	7.0%
Total operating expenses	34,614	143.8%	23,818	108.8%
Operating loss	(26,423)	-109.7%	(12,119)	-55.3%
Accretion expense	(440)	-1.8%	(331)	-1.5%
Other income (expense), net	196	0.8%	263	1.2%
Loss from continuing operations before tax	(26,667)	-110.7%	(12,187)	-55.7%
Benefit (provision) for income taxes	(28)	-0.1%	18	0.1%
Loss from continuing operations	(26,639)	-110.6%	(12,205)	-55.7%
(Loss) income from discontinued operations, net of tax	(88)	-0.4%	16	0.1%
Net loss	$ (26,727)	-111.0%	$ (12,189)	-55.7%

Revenue, net

Consolidated revenue for the year ended December 31, 2019 increased by $2.2 million, or 10%, to $24.1 million, compared to the year ended December 31, 2018. This increase was primarily attributable to $6.7 million of revenue recognized in our pharma services as well as an increase in clinical services unit volume in 2019. During the fourth quarter of 2019, we recorded an $8.7 million adjustment for accounts receivable balances, recorded as a reduction in net revenue (representing a change in estimate in accordance with ASC 606) due to third party collection issues, of which $3.5 million was related to billings in 2018 and $5.2 million related to billings in 2019.

Cost of revenue

Consolidated cost of revenue for the year ended December 31, 2019 increased by $5.7 million, or 57%, to $15.9 million, compared to the year ended December 31, 2018 primarily due to pharma services acquired in July 2019.

Gross Profit

Consolidated gross profit for the year ended December 31, 2019 decreased $3.4 million, or 30%, to $8.2 million, compared to $11.7 million for the year ended December 31, 2018. This decrease was primarily attributable to a $3.5 million revenue reduction relating to third party collections issues in connection with 2018 clinical services billings that were identified and accounted for in 2019.

Sales and marketing expense

Sales and marketing expense was $11.1 million for the year ended December 31, 2019, as compared to $8.4 million for the year ended December 31, 2018. As a percentage of revenue, sales and marketing expense increased to 46% from 39% in the comparable prior year period. The increase in sales and marketing expense was primarily due to the acquisition of the Biopharma business and reflects an increase in employee and consulting costs, as we expanded the size of our salesforce and have increased our contracting and marketing activities which are supporting our growth. The increase in sales and marketing costs as a percentage of sales was also driven by the $8.7 million revenue reduction recorded in 2019.

Research and development

Research and development expense reflects clinical and research costs for supplies, laboratory tests and evaluations, scientific and administrative staff involved in clinical research, statistical research and product development related to new tests, products and programs. Research and development expense was $2.8 million and as a percentage of revenue was 12% for the year ended December 31, 2019. For the year ended December 31, 2018, the expense was $2.1 million and as a percentage of revenue was 10%. The increase was primarily driven by pharma services acquired in July 2019.

General and administrative

General and administrative expense for the year ended December 31, 2019 was $14.5 million as compared to $8.5 million for the year ended December 31, 2018. This increase was primarily related to certain non-cash charges including $0.5 million of bad debt expense from the ASC 606 conversion and the $0.4 million reversal of a contingent claim in the prior year as well as $3.3 million of general and administrative costs associated with pharma services discussed previously. As a percentage of net revenue, general and administrative expense was 60% for the year ended December 31, 2019 as compared to 39% for the year ended December 31, 2018.

Acquisition related expense

During the year ended December 31, 2019, we incurred approximately $2.5 million in external costs related to our acquisition of pharma services on July 15, 2019.

Acquisition related amortization expense

During the years ended December 31, 2019 and December 31, 2018, we recorded amortization expense of approximately $3.7 million and $3.3 million, respectively, which is related to intangible assets associated with our acquisitions.

Change in fair value of contingent consideration

During the year ended December 31, 2019, there was a $0.04 million decrease in the contingent consideration liability. During the year ended December 31, 2018, there was a $1.5 million increase in contingent consideration liability related to an increase in estimated future royalty payments payable to Asuragen.

Operating loss

There were operating losses from continuing operations of $26.4 million and $12.1 million during the years ended December 31, 2019 and 2018, respectively. The increase in operating loss from continuing operations in the year ended December 31, 2019 was primarily attributable to the acquisition expenses and operating loss associated with the pharma services acquisition and the revenue reductions discussed above.

(Benefit) provision for income taxes

We had an income tax benefit of $28,000 for the year ended December 31, 2019 and income tax expense of $18,000 for the year ended December 31, 2018. Income tax expense for 2018 was primarily driven by minimum state and local taxes.

(Loss) income from discontinued operations, before tax

We had a loss from discontinued operations of $0.1 million for the year ended December 31, 2019 as compared to income from discontinued operations of $0.02 million for the year ended December 31, 2018.

Non-GAAP Financial Measures

In addition to the United States generally accepted accounting principles, or GAAP, results provided throughout this document, we have provided certain non-GAAP financial measures to help evaluate the results of its performance. We believe that these non-GAAP financial measures, when presented in conjunction with comparable GAAP financial measures, are useful to both management and investors in analyzing our ongoing business and operating performance. We believe that providing the non-GAAP information to investors, in addition to the GAAP presentation, allows investors to view our financial results in the way that management views financial results.

In this 10-K, we discuss Adjusted EBITDA, a non-GAAP financial measure. Adjusted EBITDA is a metric used by management to measure cash flow of the ongoing business. Adjusted EBITDA is defined as income or loss from continuing operations, plus depreciation and amortization, acquisition related expenses, transition expenses, non-cash stock based compensation, interest and taxes, and other non-cash expenses including asset impairment costs, bad debt expense, loss on extinguishment of debt, goodwill impairment and change in fair value of contingent consideration, and warrant liability. The table below includes a reconciliation of this non-GAAP financial measure to the most directly comparable GAAP financial measure.

GAAP to Non-GAAP Reconciliation (Unaudited)
($ in thousands)

	Year Ended December 31,	
	2019	**2018**
Loss from continuing operations (GAAP Basis)	$ (26,639)	$ (12,205)
Acquisition related expense	2,534	-
Transaction expenses	836	-
Depreciation and amortization	4,187	3,464
Stock-based compensation	1,535	2,270
Bad debt expense	499	-
Taxes	(28)	18
Accretion expense	440	331
Mark to market on warrant liability	(279)	(112)
Change in fair value of contingent consideration	(44)	1,522
Non-GAAP Adjusted EBITDA	$ (16,959)	$ (4,712)

LIQUIDITY AND CAPITAL RESOURCES

For the fiscal year ended December 31, 2019, we had an operating loss of $26.4 million. As of December 31, 2019, we had cash and cash equivalents of $2.3 million, total current assets of $16.4 million and current liabilities of $17.3 million. As of April 21, 2020 we have approximately $18.4 million of cash on hand. Also as of April 21, 2020, the Company has no further availability on its credit facility, but is in the process of completing an agreement with SVB to expand the credit facility from $4.0 million to $8.0 million. No assurance can be given that such an expansion agreement will be entered into.

During the year ended December 31, 2019, net cash used in operating activities was $19.0 million, all but $0.03 million of which was used in continuing operations. The main component of cash used in operating activities was our loss from continuing operations of $26.6 million. During the year ended December 31, 2018, net cash used in operating activities was $8.7 million, of which $8.3 million was used in continuing operations and $0.4 million was used in discontinued operations. The main component of cash used in operating activities during the year ended December 31, 2018 was our loss from continuing operations of $12.2 million.

For the year ended December 31, 2019, there was cash provided from financing activities of $29.2 million, $6.5 million of which resulted from the issuance of common stock in our underwritten public offering completed in January 2019, $25.7 million which resulted from the issuance of Preferred Stock in July and October 2019, and $3.0 million from the drawing down of funds under our revolving line of credit with Silicon Valley Bank ("SVB"). This was partially offset by the payment of the note payable to Cancer Genetics of $6.0 million as part of the acquisition of the BioPharma business in July 2019.

For the year ended December 31, 2019, there was cash used in investing activities of $13.9 million, $13.8 million of which was used in our pharma services, acquired in July 2019. For the year ended December 31, 2018, there was cash used in investing activities of $0.4 million primarily for the purchase of lab equipment.

In September 2019, we entered into the Equity Distribution Agreement (the "Agreement") with Oppenheimer & Co. Inc., as sales agent (the "Agent"), pursuant to which we may, from time to time, issue and sell shares of our common stock in an aggregate offering price of up to $4.8 million through the Agent. See Note 13, *Equity* of the notes to the financial statements for more details. As of December 31, 2019, 97,817 shares (as adjusted for the reverse stock split) of common stock were sold for net proceeds of approximately $0.2 million.

As of December 31, 2019, the Company had drawn $3.0 million of the $3.75 million of available funds under its Revolving Line with SVB. The funds drawn were used principally in conjunction with the acquisition of pharma services. As of April 10, 2020, we had $3.4 million outstanding on the Revolving Line.

In January 2020, we sold 20,000 preferred shares to investors, led by 1315 Capital, for net proceeds of approximately $19.5 million; see Note 21*Subsequent Events* of the footnotes to the financial statements for more detail.

During April 2020, the Company applied for, or is in the process of applying for, various federal stimulus loans, grants and advances made available under Title 1 of the Coronavirus Aid, Relief, and Economic Security (CARES) Act, including an approximate $3.5 million loan request under the Small Business Administration (SBA) Paycheck Protection Program (PPP), an approximate $0.65 million grant from the Department of Health and Human Services (HSS), and approximately $2.1 million in advances under the Centers for Medicare & Medicaid Services (CMS) accelerated and advance payment program. Each of these loans, grants and advances require certain certifications by the Company and impose specific limitations on the use of the proceeds.

As of April 21, 2020, we received $2.1 million in advances under the CMS accelerated and advance payment program, as well as the $0.65 million HSS grant. The CMS advance will be offset against future Medicare billings of the Company, and the HSS grant is subject to certain conditions regarding its use, including developing coronavirus and serology tests. There is no guarantee that any other loans, grants or advances will be approved. As of April 21, 2020, the Company's PPP loan has not yet been approved, pending new legislation increasing the pool. The PPP provides for loans to qualifying businesses for amounts up to 2.5 times of the average monthly payroll expenses of the qualifying business. The PPP loans and accrued interest are forgivable after eight weeks as long as the borrower uses the loan proceeds for eligible purposes, including payroll, benefits, rent and utilities, and maintains its payroll levels. The amount of loan forgiveness will be reduced if the borrower terminates employees or reduces salaries during the eight-week period. The unforgiven portion of the PPP loan is payable over two years at an interest rate of 1%, with a deferral of payments for the first six months. If the Company is successful in obtaining a PPP loan, we intend to use the proceeds for purposes consistent with the PPP and expect to meet the conditions for forgiveness of the loan.

We do not expect to generate positive cash flows from operations for the year ending December 31, 2020. We intend to meet our ongoing capital needs by using our available cash, proceeds under the Securities Purchase and Exchange Agreement, additional borrowings under the Line of Credit as well as increasing our line of credit limit by an additional $4 million as a result of the additional accounts receivable acquired in July 2019 as part of our acquisition of pharma services (which requires a modification to the bank agreement and approval by SVB, as well as approval by our preferred shareholders), revenue growth and margin improvement, collecting accounts receivable, containing costs as well as exploring other financing options. Management believes that the Company has sufficient cash on hand and available to sustain operations through at least April 23, 2021. However, there is no guarantee that additional capital can be raised to fund our future operations.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements.

Inflation

We do not believe that inflation had a significant impact on our results of operations for the periods presented. On an ongoing basis, we attempt to minimize any effects of inflation on our operating results by controlling operating costs and whenever possible, seeking to insure that billing rates reflect increases in costs due to inflation.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are a "smaller reporting company" for purposes of the disclosure requirements of Item 305 of Regulation S-K and, therefore, we are not required to provide this information.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Financial statements and the financial statement schedule specified by this Item 8, together with the report thereon of BDO USA, LLP, are presented following Item 15 of this Annual Report on Form 10-K.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURES

None.

ITEM 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures pursuant to Rule 13a-15 under the Exchange Act as of December 31, 2019. In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives including that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the SEC rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. In addition, management is required to apply its judgment in evaluating the benefits of possible disclosure controls and procedures relative to their costs to implement and maintain.

Based on the evaluation of our disclosure controls and procedures, as that term is defined in Rule 13a-15(e) under the Exchange Act, our Chief Executive Officer and Chief Financial Officer, have concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of December 31, 2019.

Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f).

All internal control systems, no matter how well designed, have inherent limitations including the possibility of human error and the circumvention or overriding of controls. Further, because of changes in conditions, the effectiveness of internal controls may vary over time. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. Accordingly, even those systems determined to be effective can provide us only with reasonable assurance with respect to financial statement preparation and presentation.

For the year ended December 31, 2019, management excluded the BioPharma business acquired from Cancer Genetics, Inc. on July 15, 2019 from management's report on internal control over financial reporting. This acquired business was not significant to the registrant's consolidated financial statements.

Our internal control system was designed to provide reasonable assurance to our management and Board regarding the preparation and fair presentation of published financial statements. Management evaluated the effectiveness of our internal control over financial reporting using the criteria set forth by the Committee of Sponsoring Organizations (COSO) of the Treadway Commission in Internal Control — Integrated Framework in 2013. Management, under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, assessed the effectiveness of our internal control over financial reporting as of December 31, 2019 and concluded that it is effective to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. GAAP.

Changes in Internal Control over Financial Reporting

There were no changes in internal control over financial reporting that occurred during the fourth fiscal quarter that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information relating to directors and executive officers of the registrant that is responsive to Item 10 of this Annual Report on Form 10-K will be included in our Proxy Statement for our 2020 annual meeting of stockholders and such information is incorporated by reference herein.

ITEM 11. EXECUTIVE COMPENSATION

Information relating to executive compensation of the registrant that is responsive to Item 11 of this Annual Report on Form 10-K will be included in our Proxy Statement for our 2020 annual meeting of stockholders, and such information is incorporated by reference herein.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information relating to security ownership of certain beneficial owners and management of the registrant that is responsive to Item 12 of this Annual Report on Form 10-K will be included in our Proxy Statement for our 2020 annual meeting of stockholders and such information is incorporated by reference herein.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Information relating to certain relationships and related transactions of the registrant that is responsive to Item 13 of this Annual Report on Form 10-K will be included in our Proxy Statement for our 2020 annual meeting of stockholders and such information is incorporated by reference herein.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Information relating to principal accounting fees and services of the registrant that is responsive to Item 14 of this Annual Report on Form 10-K will be included in our Proxy Statement for our 2020 annual meeting of stockholders and such information is incorporated by reference herein.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) The following documents are filed as part of this Form 10-K:

(1) Financial Statements – See Index to Financial Statements on page F-1 of this Form 10-K.
(2) Financial Statement Schedule

Schedule II: Valuation and Qualifying Accounts

All other schedules are omitted because they are not applicable or the required information is shown in the financial statements or notes thereto.

(3) Exhibits

Exhibit No.	Description
2.1	Asset Purchase Agreement, dated August 13, 2014, by and between Interpace Diagnostics, LLC and Asuragen, Inc., incorporated by reference to Exhibit 2.2 of the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2014, filed with the SEC on November 5, 2014.
2.2	Asset Purchase Agreement, dated as of October 30, 2015, by and between Publicis Touchpoint Solutions, Inc. and PDI, Inc., incorporated by reference to Exhibit 2.1 of the Company's Current Report on Form 8-K, filed with the SEC on November 2, 2015.
2.3	Secured Creditor Asset Purchase Agreement, dated July 15, 2019, by and among Interpace BioPharma, Inc., Cancer Genetics, Inc., Interpace Diagnostics Group, Inc. and Partners for Growth IV, L.P., incorporated by reference to Exhibit 2.1 of the Company's Current Report on Form 8-K, filed with the SEC on July 19, 2019.
3.1+	Conformed version of Certificate of Incorporation of Interpace Biosciences, Inc., as amended by the Certificate of Amendment, effective January 15, 2020, and the Certificate of Designation of Preferences, Rights and Limitations of Series B Convertible Preferred Stock, filed January 17, 2020, filed herewith.
3.2	Amended and Restated Bylaws of Interpace Biosciences, Inc., incorporated by reference to Exhibit 3.2 of the Company's Current Report on Form 8-K, filed with the SEC on November 14, 2019.
4.1	Description of Securities, filed herewith.
4.2	Specimen Certificate Representing the Common Stock, incorporated by reference to Exhibit 4.1 of the Company's Registration Statement on Form S-3 (File No. 333-227728), filed with the SEC on October 5, 2018.
4.3	Form of Common Stock Purchase Warrant, incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K, filed with the SEC on January 20, 2017.
4.4	Form of Common Stock Purchase Warrant, incorporated by reference to Exhibit 4.3 of the Company's Current Report on Form 8-K, as amended, filed with the SEC on March 24, 2017.
4.5	Form of PreFunded Common Stock Purchase Warrant, incorporated by reference to Exhibit 4.2 of the Company's Current Report on Form 8-K, filed with the SEC on June 21, 2017.
4.6	Form of Underwriters' Warrants, incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K, filed with the SEC on June 21, 2017.
4.7	Form of Common Stock Purchase Warrant, incorporated by reference to Exhibit 4.3 of the Company's Current Report on Form 8-K, filed with the SEC on June 21, 2017.
4.8	Form of Common Stock Purchase Warrant, incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K, filed with the SEC on October 12, 2017.
4.9	Loan and Security Agreement, dated November 13, 2018, by and among Silicon Valley Bank, Interpace Diagnostics Group, Inc., Interpace Diagnostics Corporation, and Interpace Diagnostics, LLC, filed herewith.
4.10	Form of Underwriter Common Stock Purchase Warrant, incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K, filed with the SEC on January 29, 2019.
4.11	Subordinated Seller Note of Interpace BioPharma, Inc., dated July 15, 2019, in favor of Cancer Genetics, Inc., incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K, filed with the SEC on July 19, 2019.
10.1*	Amended and Restated 2004 Stock Award and Incentive Plan, incorporated by reference to Annex A of the Company's definitive proxy statement, filed with the SEC on August 14, 2017.
10.2*	Form of Restricted Stock Unit Agreement for Employees, incorporated by reference to Exhibit 10.1 of the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2018, filed with the SEC on May 15, 2018.

Exhibit No.	Description
10.3*	Form of Restricted Stock Unit Agreement for Directors, incorporated by reference to Exhibit 10.2 of the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2018, filed with the SEC on May 15, 2018.
10.4*	Form of Non-Qualified Stock Option Agreement, incorporated by reference to Exhibit 10.3 of the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2018, filed with the SEC on May 15, 2018.
10.5*	Form of Incentive Stock Option Agreement, incorporated by reference to Exhibit 10.4 of the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2018, filed with the SEC on May 15, 2018.
10.6*	Interpace Diagnostics Group, Inc. 2019 Equity Incentive Plan, incorporated by reference to Exhibit 4.1 of the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2019, filed with the SEC on November 14, 2019.
10.7*	Form of Restricted Stock Unit Grant Notice and Restricted Stock Unit Agreement under the 2019 Equity Incentive Plan, incorporated by reference to Exhibit 4.3 of the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2019, filed with the SEC on November 14, 2019.
10.8*	Form of Stock Option Grant Notice and Stock Option Agreement under the 2019 Equity Incentive Plan, incorporated by reference to Exhibit 4.4 of the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2019, filed with the SEC on November 14, 2019.
10.9*	Interpace Diagnostics Group, Inc. Employee Stock Purchase Plan, incorporated by reference to Exhibit 4.2 of the Company's quarterly report on Form 10-Q for the quarter ended September 30, 2019, filed with the SEC on November 14, 2019.
10.10*	Incentive Stock Option Agreement between Interpace Diagnostics Group, Inc. and James Early, incorporated by reference to Exhibit 10.2 of the Company's Current Report on Form 8-K, filed with the SEC on October 20, 2016.
10.11*	Employment Agreement between Interpace Diagnostics Group, Inc. and James Early, effective as of March 16, 2018, incorporated by reference to Exhibit 10.44 of the Company's Annual Report on Form 10-K for the year ended December 31, 2017, filed with the SEC on March 23, 2018.
10.12*	Severance and Consulting Agreement and General Release, dated January 29, 2020, by and between Interpace Biosciences, Inc. and James Early, incorporated by reference to Exhibit 10.2 of the Company's Current Report on Form 8-K, filed with the SEC on January 31, 2020.
10.13*	Employment Agreement, dated as of January 29, 2020, by and between Interpace Biosciences, Inc. and Fred Knechtel, incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K, filed with the SEC on January 31, 2020.
10.14*	Incentive Stock Option Agreement between Interpace Diagnostics Group, Inc. and Jack E. Stover, incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K, filed with the SEC on October 20, 2016.
10.15*	Amended and Restated Employment Agreement dated December 5, 2018, between the Company and Jack E. Stover, incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K, filed with the SEC on December 11, 2018.
10.16*	First Amendment to Amended and Restated Employment Agreement, dated January 29, 2020, by and between Interpace Biosciences, Inc. and Jack E. Stover, incorporated by reference to Exhibit 10.3 of the Company's Current Report on Form 8-K, filed with the SEC on January 31, 2020.
10.17*	Employment Separation Agreement between Interpace Diagnostics, LLC and Gregory Richard, effective as of March 25, 2015, incorporated by reference to Exhibit 10.39 of the Company's Annual Report on Form 10-K for the year ended December 31, 2018, filed with the SEC on March 21, 2019.
10.18*	Form of Indemnification Agreement by and between Interpace Diagnostics Group, Inc. and its directors and executive officers, incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K, filed with the SEC on August 8, 2016.
10.19*	Form of Indemnification Agreement by and between Interpace Biosciences, Inc. and Indemnitee, incorporated by reference to Exhibit 10.2 of the Company's Current Report on Form 8-K, filed with the SEC on January 17, 2020.
10.20	License Agreement, dated August 13, 2014, by and between Interpace Diagnostics, LLC and Asuragen, Inc., incorporated by reference to Exhibit 10.31 of the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2014, filed with the SEC on November 5, 2014.

Exhibit No.	Description
10.21	CPRIT License Agreement, dated August 13, 2014, by and between Interpace Diagnostics, LLC and Asuragen, Inc., incorporated by reference to Exhibit 10.32 of the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2014, filed with the SEC on November 5, 2014.
10.22	Supply Agreement, dated August 13, 2014, by and between Interpace Diagnostics, LLC and Asuragen, Inc., incorporated by reference to Exhibit 10.33 of the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2014, filed with the SEC on November 5, 2014.
10.23	Guaranty, dated August 13, 2014 by the Company in favor of Asuragen, Inc., incorporated by reference to Exhibit 10.34 of the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2014, filed with the SEC on November 5, 2014.
10.24	Morris Corporate Center Lease, incorporated by reference to Exhibit 10.1 of the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2009, filed with the SEC on November 5, 2009.
10.25	First Amendment to Lease, dated May 24, 2017, by and between Brookwood MC Investors, LLC, Brookwood MC II, LLC, and the Company, incorporated by reference to Exhibit 10.52 of the Company's Registration Statement on Form S-1 (333-218140), as amended, filed with the SEC on June 13, 2017.
10.26	Lease, dated June 28, 2015, by and between WE 2 Church Street South LLC and JS Genetics, LLC, incorporated by reference to Exhibit 10.42 of the Company's Annual Report on Form 10-K for the year ended December 31, 2014, filed with the SEC on March 5, 2015.
10.27	Amendment No. 1 to Lease, dated September 18, 2007, by and between WE 2 Church Street South LLC and JS Genetics, LLC, incorporated by reference to Exhibit 10.43 of the Company's Annual Report on Form 10-K for the year ended December 31, 2014, filed with the SEC on March 5, 2015.
10.28	Amendment No. 2 to Lease, dated August 29, 2008, by and between WE 2 Church Street South LLC and JS Genetics, LLC, incorporated by reference to Exhibit 10.44 of the Company's Annual Report on Form 10-K for the year ended December 31, 2014, filed with the SEC on March 5, 2015.
10.29	Amendment No. 3 to Lease, dated April 8, 2009, by and between WE 2 Church Street South LLC and JS Genetics, LLC, incorporated by reference to Exhibit 10.45 of the Company's Annual Report on Form 10-K for the year ended December 31, 2014, filed with the SEC on March 5, 2015.
10.30	Amendment No. 4 to Lease, dated September 16, 2010, by and between WE 2 Church Street South LLC and JS Genetics, LLC, incorporated by reference to Exhibit 10.46 of the Company's Annual Report on Form 10-K for the year ended December 31, 2014, filed with the SEC on March 5, 2015.
10.31	Amendment No. 5 to Lease, dated September 15, 2011, by and between WE 2 Church Street South LLC and JS Genetics, LLC, incorporated by reference to Exhibit 10.47 of the Company's Annual Report on Form 10-K for the year ended December 31, 2014, filed with the SEC on March 5, 2015.
10.32	Amendment No. 6 to Lease, dated March 5, 2014, by and between WE 2 Church Street South LLC and JS Genetics, LLC, incorporated by reference to Exhibit 10.48 of the Company's Annual Report on Form 10-K for the year ended December 31, 2014, filed with the SEC on March 5, 2015.
10.33	Amendment No. 7 to Lease, dated August 29, 2014, by and between WE 2 Church Street South LLC and JS Genetics, LLC, incorporated by reference to Exhibit 10.49 of the Company's Annual Report on Form 10-K for the year ended December 31, 2014, filed with the SEC on March 5, 2015.
10.34	Amendment No. 8 to Lease, dated December 31, 2019, by and between WE 2 Church Street South LLC and Interpace Diagnostics Lab Inc., filed herewith.
10.35	Lease Agreement, dated March 31, 2017, by and between Saddle Lane Realty, LLC and the Company, incorporated by reference to Exhibit 10.53 of the Company's Registration Statement on Form S-1 (333-218140), as amended on June 13, 2017.
10.36	First Amendment, dated September 26, 2017, by and between Saddle Lane Realty, LLC and Interpace Diagnostics Corporation, filed herewith.
10.37	Amendment No. 2 to Lease, dated March 15, 2018, between Saddle Lane Realty, LLC and Interpace Diagnostics Corporation, incorporated by reference to Exhibit 10.45 of the Company's Annual Report on Form 10-K for the year ended December 31, 2017, filed with the SEC on March 23, 2018.
10.38	Form of Securities Purchase Agreement, dated January 20, 2017, by and between Interpace Diagnostics Group, Inc. and certain purchasers named therein, incorporated by reference to Exhibit 10.2 of the Company's Current Report on Form 8-K, filed with the SEC on January 20, 2017.
10.39	Warrant Agency Agreement, dated June 21, 2017, by and between Interpace Diagnostics Group, Inc. and American Stock Transfer & Trust Company, LLC, incorporated by reference to Exhibit 1.2 of the Company's Current Report on Form 8-K, filed with the SEC on June 21, 2017.

Exhibit No.	Description
10.40	Form of Warrant Exercise Agreement dated October 12, 2017, incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K, filed with the SEC on October 12, 2017.
10.41	Securities Purchase Agreement, dated July 15, 2019, by and between Interpace Diagnostics Group, Inc. and Ampersand 2018 Limited Partnership, incorporated by reference to Exhibit 10.2 of the Company's Current Report on Form 8-K, filed with the SEC on July 19, 2019.
10.42	Transition Services Agreement, dated July 15, 2019, by and between Interpace BioPharma, Inc. and Cancer Genetics, Inc., incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K, filed with the SEC on July 19, 2019.
10.43	Form of Voting Agreement, incorporated by reference to Exhibit 10.4 of the Company's Current Report on Form 8-K, filed with the SEC on July 19, 2019.
10.44	Office Lease Agreement, dated October 9, 2007, by and between Meadows Office, L.L.C. and Cancer Genetics, Inc., filed herewith.
10.45	First Amendment to Lease, dated October 30, 2017, by and between Meadows Landmark LLC and Cancer Genetics, Inc., filed herewith.
10.46	Consent to Assignment, dated July 19, 2019, by and among Meadows Landmark LLC, Cancer Genetics, Inc., and Interpace BioPharma, Inc., filed herewith.
10.47	Lease Agreement, dated June 12, 2004, by and between Southport Business Park Limited Partnership and Gentris Corporation, filed herewith.
10.48	Letter Amendment, dated October 21, 2004, by and between Southport Business Park Limited Partnership and Gentris Corporation, filed herewith.
10.49	Second Amendment to Lease, dated June 17, 2005, by and between Southport Business Park Limited Partnership and Gentris Corporation, filed herewith.
10.50	Third Amendment to Lease, dated May 25, 2006, by and between Southport Business Park Limited Partnership and Gentris Corporation, filed herewith.
10.51	Fourth Amendment to Lease, dated December 20, 2007, by and between Southport Business Park Limited Partnership and Gentris Corporation, filed herewith.
10.52	Fifth Amendment to Lease, dated June 15, 2009, by and between Southport Business Park Limited Partnership and Gentris Corporation, filed herewith.
10.53	Sixth Amendment to Lease, dated June 3, 2010, by and between Southport Business Park Limited Partnership and Gentris Corporation, filed herewith.
10.54	Seventh Amendment to Lease, dated October 26, 2010, by and between Southport Business Park Limited Partnership and Gentris Corporation, filed herewith.
10.55	Eighth Amendment to Lease, dated July 27, 2011, by and between Southport Business Park Limited Partnership and Gentris Corporation, filed herewith.
10.56	Ninth Amendment to Lease, dated November 7, 2012, by and between Southport Business Park Limited Partnership and Gentris Corporation, filed herewith.
10.57	Tenth Amendment to Lease, dated July 15, 2014, by and among Southport Business Park Limited Partnership, Gentris Corporation, and Gentris, LLC, filed herewith.
10.58	Assignment of Lease, dated July 15, 2019, by and between Cancer Genetics, Inc. and Interpace BioPharma, Inc., filed herewith.
10.59	Guaranty of Lease, dated July 15, 2019, by and between Interpace Diagnostics Group, Inc. and Southport Business Park Limited Partnership, filed herewith.
10.60	Equity Distribution Agreement, dated September 20, 2019, by and between Interpace Diagnostics Group, Inc. and Oppenheimer & Co. Inc., incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K, filed with the SEC on September 20, 2019.
10.61	Securities Purchase and Exchange Agreement, dated January 10, 2020, by and among Interpace Biosciences, Inc., 1315 Capital II, L.P. and Ampersand 2018 Limited Partnership, incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K, filed with the SEC on January 14, 2020.
10.62	Amended and Restated Investor Rights Agreement, dated as of January 15, 2020, by and among Interpace Biosciences, Inc., 1315 Capital II, L.P. and Ampersand 2018 Limited Partnership, incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K, filed with the SEC on January 17, 2020.
21.1	Subsidiaries of the Registrant, filed herewith.
23.1	Consent of BDO USA, LLP, filed herewith.
31.1	Certification of Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, filed herewith.
31.2	Certification of Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, filed herewith.
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, filed herewith.
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, filed herewith.

* Denotes compensatory plan, compensation arrangement or management contract.

\+ This exhibit is being filed pursuant to Item 601(b)(3)(i) of Regulation S-K which requires a conformed version of the Company's charter reflecting all amendments in one document. The exhibit reflects the Company's Certificate of Incorporation, as amended, as amended by the Certificate of Amendment, effective January 15, 2020, and the Certificate of Designation of Preferences, Rights and Limitations of Series B Convertible Preferred Stock, filed January 17, 2020.

ITEM 16. Form 10-K Summary

The Company has opted to not provide a summary.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

INTERPACE BIOSCIENCES, INC.

Date: April 22, 2020

/s/ Jack E. Stover
Jack E. Stover
President and Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this report has been signed by the following persons on behalf of the registrant and in the capacities indicated and on the dates indicated.

Name	Title	Date
/s/ Jack E. Stover Jack E. Stover	President, Chief Executive Officer and Director (Principal Executive Officer)	April 22, 2020
/s/ Fred Knechtel Fred Knechtel	Chief Financial Officer and Treasurer (Principal Financial Officer)	April 22, 2020
/s/ Thomas Freeburg Thomas Freeburg	Chief Accounting Officer (Principal Accounting Officer)	April 22, 2020
/s/ Stephen J. Sullivan Stephen J. Sullivan	Director	April 22, 2020
/s/ Joseph Keegan Joseph Keegan	Director	April 22, 2020
/s/ Eric Lev Eric Lev	Director	April 22, 2020
/s/ Robert Gorman Robert Gorman	Chairman of the Board of Directors	April 22, 2020
/s/ Edward Chan Edward Chan	Director	April 22, 2020
/s/ Fortunato Ron Rocca Fortunato Ron Rocca	Director	April 22, 2020

Interpace Biosciences, Inc.
Index to Consolidated Financial Statements
and Financial Statement Schedules

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Shareholders and Board of Directors
Interpace Biosciences, Inc.
Parsippany, New Jersey

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Interpace Biosciences, Inc. and subsidiaries (the "Company") as of December 31, 2019 and 2018, the related consolidated statements of operations, stockholders' equity, and cash flows for each of the two years in the period ended December 31, 2019, and the related notes and schedule (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2019, in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting 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.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Emphasis of a Matter

As discussed in Note 9 to the consolidated financial statements, the Company has changed its method for accounting for Leases as of January 1, 2019 due to the adoption of ASU 2016-02, Leases (Topic 842).

/s/ BDO USA, LLP

We have served as the Company's auditor since 2012.

Woodbridge, New Jersey
April 22, 2020

INTERPACE BIOSCIENCES, INC.
CONSOLIDATED BALANCE SHEETS
(in thousands, except share and per share data)

	December 31, 2019	December 31, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 2,321	$ 6,068
Accounts receivable, net	10,197	9,483
Other current assets	3,851	2,170
Total current assets	16,369	17,721
Property and equipment, net	6,814	837
Other intangible assets, net	33,501	29,853
Goodwill	8,433	-
Operating lease right of use assets	3,892	-
Other long-term assets	42	31
Total assets	$ 69,051	$ 48,442
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 4,812	$ 1,059
Accrued salary and bonus	2,341	1,424
Other accrued expenses	9,379	5,091
Current liabilities from discontinued operations	766	918
Total current liabilities	17,298	8,492
Contingent consideration	2,391	2,693
Operating lease liabilities, net of current portion	2,591	-
Line of credit	3,000	-
Other long-term liabilities	4,573	4,319
Total liabilities	29,853	15,504
Commitments and contingencies (Note 12)		
Preferred stock, $.01 par value; 5,000,000 shares authorized, 270 shares issued and outstanding	26,172	-
Stockholders' equity:		
Common stock, $.01 par value; 100,000,000 shares authorized; 3,932,370 and 2,876,734 shares issued, respectively; 3,920,589 and 2,869,427 shares outstanding, respectively	393	287
Additional paid-in capital	182,514	175,820
Accumulated deficit	(168,160)	(141,489)
Treasury stock, at cost (11,781 and 7,307 shares, respectively)	(1,721)	(1,680)
Total stockholders' equity	13,026	32,938
Total liabilities and stockholders' equity	$ 42,879	$ 48,442
Total liabilities, preferred stock and stockholders' equity	$ 69,051	$ 48,442

The accompanying notes are an integral part of these consolidated financial statements

INTERPACE BIOSCIENCES, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except for per share data)

	For The Years Ended December 31,	
	2019	**2018**
Revenue, net	$ 24,079	$ 21,896
Cost of revenue (excluding amortization of $3,652 and $3,252, respectively)	15,888	10,197
Gross profit	8,191	11,699
Operating expenses:		
Sales and marketing	11,116	8,421
Research and development	2,810	2,124
General and administrative	14,546	8,499
Acquisition related expense	2,534	-
Acquisition related amortization expense	3,652	3,252
Change in fair value of contingent consideration	(44)	1,522
Total operating expenses	34,614	23,818
Operating loss	(26,423)	(12,119)
Accretion expense	(440)	(331)
Other income (expense), net	196	263
Loss from continuing operations before tax	(26,667)	(12,187)
(Benefit) provision for income taxes	(28)	18
Loss from continuing operations, net of tax	(26,639)	(12,205)
Less Preferred stock dividends	(429)	-
Loss from continuing operations attributable to common stockholders	(27,068)	(12,205)
(Loss) income from discontinued operations, net of tax	(88)	16
Net loss attributable to common stockholders	$ (27,156)	$ (12,189)
Basic and diluted (loss) income per share of common stock:		
From continuing operations	$ (7.23)	$ (4.33)
From discontinued operations	(0.02)	-
Net loss per basic and diluted share of common stock	$ (7.25)	$ (4.33)
Weighted average number of common shares and common share equivalents outstanding:		
Basic	3,746	2,816
Diluted	3,746	2,816

The accompanying notes are an integral part of these consolidated financial statements

INTERPACE BIOSCIENCES, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(in thousands)

	For The Year Ended December 31, 2019		For The Year Ended December 31, 2018	
	Shares	**Amount**	**Shares**	**Amount**
Common stock:				
Balance at January 1	2,877	$ 287	2,790	$ 278
Common stock issued	9	1	4	1
Common stock issued through offerings	933	94	-	-
Balance at March 31	3,819	382	2,794	279
Common stock issued	10	1	33	3
Balance at June 30	3,829	383	2,827	282
Common stock issued	-	-	10	1
Common stock issued through offerings	-	-	-	-
Balance at September 30	3,829	383	2,837	283
Common stock issued	5	-	40	4
Common stock issued through market sales	98	10	-	-
Balance at December 31	3,932	393	2,877	287
Treasury stock:				
Balance at January 1	7	(1,680)	6	(1,671)
Treasury stock purchased	3	(32)	1	(9)
Balance at March 31	10	(1,712)	7	(1,680)
Treasury stock purchased	-	-	-	-
Balance at June 30	10	(1,712)	7	(1,680)
Treasury stock purchased	-	-	-	-
Balance at September 30	10	(1,712)	7	(1,680)
Treasury stock purchased	2	(9)	-	-
Balance at December 31	12	(1,721)	7	(1,680)
Additional paid-in capital:				
Balance at January 1		175,820		173,062
Common stock issued through offerings, net of expenses		5,868		-
Stock-based compensation expense		266		597
Balance at March 31		181,954		173,659
Common stock issued		72		282
Stock-based compensation expense		205		419
Balance at June 30		182,231		174,360
Common stock issued		-		144
Dividends accrued		(75)		-
Stock-based compensation expense		205		374
Balance at September 30		182,361		174,878
Common stock issued through market sales, net of expenses		218		-
Common stock issued		-		598
Dividends accrued		(354)		-
Stock-based compensation expense		289		344
Balance at December 31		182,514		175,820
Accumulated deficit:				
Balance at January 1		(141,489)		(131,800)
Net loss		(3,419)		(3,193)
Adoption of ASC 606		-		2,500
Adoption of ASC 842		55		-
Balance at March 31		(144,853)		(132,493)
Net loss		(5,220)		(1,917)
Balance at June 30		(150,073)		(134,410)
Net loss		(7,362)		(3,042)
Balance at September 30		(157,435)		(137,452)
Net loss		(10,725)		(4,037)
Balance at December 31		(168,160)		(141,489)
Total stockholders' equity		$ 13,026		$ 32,938

The accompanying notes are an integral part of these consolidated financial statements

INTERPACE BIOSCIENCES, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	For The Years Ended December 31,	
	2019	**2018**
Cash Flows From Operating Activities		
Net loss	$ (26,727)	$ (12,189)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	4,187	3,464
Interest accretion	440	331
Bad debt expense	499	-
Reversal of DOJ accrual	-	(350)
Mark to market on warrants	(279)	112
Stock-based compensation	1,535	2,270
Deferred income taxes	18	-
Change in estimate on collectability of accounts receivable	3,479	-
Change in fair value of contingent consideration	(44)	1,522
Other gains and expenses, net	18	-
Other changes in operating assets and liabilities:		
Increase in accounts receivable	(961)	(3,546)
Decrease (increase) in other current assets	129	(501)
Increase in other long-term assets	(11)	-
(Decrease) increase in accounts payable	(835)	668
Increase in accrued salaries and bonus	482	30
Decrease in accrued liabilities	(1,341)	(402)
Increase (decrease) in long-term liabilities	454	(82)
Net cash used in operating activities	(18,957)	(8,673)
Cash Flows From Investing Activity		
Acquisition of Biopharma, net of cash acquired	(13,829)	-
Purchase of property and equipment	(131)	(449)
Sale of property and equipment	13	-
Net cash used in investing activity	(13,947)	(449)
Cash Flows From Financing Activities		
Issuance of common stock, net of expenses	6,478	-
Issuance of preferred stock, net of expenses	25,744	-
Payment of Seller's note	(6,024)	-
Borrowings on Line of Credit	3,000	-
Cash paid for repurchase of restricted shares	(41)	(9)
Net cash provided by (used in) financing activities	29,157	(9)
Net decrease in cash and cash equivalents	(3,747)	(9,131)
Cash and cash equivalents – beginning of year	6,068	15,199
Cash and cash equivalents – end of year	$ 2,321	$ 6,068

The accompanying notes are an integral part of these consolidated financial statements

1. Nature of Business and Significant Accounting Policies

Nature of Business

Interpace Biosciences, Inc. (the "Company") enables personalized medicine, offering specialized services along the therapeutic value chain from early diagnosis and prognostic planning to targeted therapeutic applications and pharma services. The Company provides molecular diagnostics, bioinformatics and pathology services for evaluation of risk of cancer by leveraging the latest technology in personalized medicine for improved patient diagnosis and management. The Company also provides pharmacogenomics testing, genotyping, biorepository and other specialized services to the pharmaceutical and biotech industries. The Company advances personalized medicine by partnering with pharmaceutical, academic, and technology leaders to effectively integrate pharmacogenomics into their drug development and clinical trial programs with the goals of delivering safer, more effective drugs to market more quickly, and improving patient care.

Principles of Consolidation

The accompanying consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles ("GAAP"). The consolidated financial statements include the accounts of Interpace Biosciences, Inc. fka Interpace Diagnostics Group, Inc., Interpace Diagnostics Corporation, Interpace Diagnostics, LLC and Interpace Pharma Solutions, Inc. fka Interpace Biopharma, Inc.

Discontinued operations include the Company's wholly-owned subsidiaries: Group DCA, LLC ("Group DCA"), InServe Support Solutions (Pharmakon), and TVG, Inc. (TVG, dissolved December 31, 2014) and its Commercial Services ("CSO") business unit. All significant intercompany balances and transactions have been eliminated in consolidation.

The Company has one reporting segment: the Company's business of developing and selling clinical services and pharma services. The Company's current reporting segment structure is reflective of the way the Company's management views the business, makes operating decisions and assesses performance. This structure allows investors to better understand Company performance, better assess prospects for future cash flows, and make more informed decisions about the Company.

Accounting Estimates

The preparation of consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the amounts of assets and liabilities reported 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. Management's estimates are based on historical experience, facts and circumstances available at the time, and various other assumptions that are believed to be reasonable under the circumstances. Significant estimates include accounting for valuation allowances related to deferred income taxes, contingent consideration, allowances for doubtful accounts and notes, revenue recognition, unrecognized tax benefits, and asset impairments involving other intangible assets. The Company periodically reviews these matters and reflects changes in estimates as appropriate. Actual results could materially differ from those estimates.

Reverse stock split

On January 15, 2020, the Company effected a one-for-ten reverse split of its issued and outstanding shares of its common stock (the "Reverse Stock Split"). Every 10 shares of common stock issued and outstanding were automatically combined into one share of issued and outstanding common stock, without any change in the par value per share. The Company's issued and outstanding stock decreased from 39,205,895 to 3,920,589 and 28,694,275 to 2,869,427 at December 31, 2019 and 2018, respectively. All information related to common stock, stock options, restricted stock units, warrants and earnings per share have been retroactively adjusted to give effect to the Reverse Stock Split for all periods presented.

Cash and Cash Equivalents

Cash and cash equivalents include unrestricted cash accounts, money market investments and highly liquid investment instruments with original maturity of three months or less at the date of purchase.

Accounts Receivable, Net

The Company's accounts receivables represent unconditional rights to consideration and are generated using its proprietary tests and pharma services. The Company's diagnostic services are fulfilled upon completion of the test, review and release of the test results. In conjunction with fulfilling these services, the Company bills the third-party payer or direct-bill payer. Contractual adjustments represent the difference between the list prices and the reimbursement rates set by third party payers, including Medicare, commercial payers, and amounts billed to direct-bill payers. Specific accounts may be written off after several appeals, which in some cases may take longer than twelve months. Pharma services represent, primarily, the performance of laboratory tests in support of clinical trials for pharma services customers. The Company bills these services directly to the customer.

Other current assets

Other current assets consisted of the following as of December 31, 2019 and 2018:

	December 31, 2019	December 31, 2018
Indemnification asset	$ -	$ 875
Lab supply inventory	1,825	-
Prepaid expenses	971	1,230
Funds in escrow	888	-
Other	167	65
Total other current assets	$ 3,851	$ 2,170

Property and Equipment, net

Property and equipment are stated at cost less accumulated depreciation and amortization. Depreciation and amortization is recognized on a straight-line basis, using the estimated useful lives of: seven to ten years for furniture and fixtures; two to five years for office and computer equipment; three to seven years for lab equipment; and leasehold improvements are amortized over the shorter of the estimated service lives or the terms of the related leases which are currently four to five years. Repairs and maintenance are charged to expense as incurred. Upon disposition, the asset and related accumulated depreciation and amortization are removed from the related accounts and any gains or losses are reflected in operations.

Software Costs

Internal-Use Software - It is the Company's policy to capitalize certain costs incurred in connection with developing or obtaining internal-use software. Capitalized software costs are included in property and equipment on the consolidated balance sheet and amortized over the software's useful life, generally three to seven years. Software costs that do not meet capitalization criteria are expensed immediately.

External-Use Software - It is the Company's policy to capitalize certain costs incurred in connection with developing or obtaining external-use software. Capitalized software costs are included in property and equipment on the consolidated balance sheet and amortized over the software's useful life, generally three years. Software costs that do not meet capitalization criteria are expensed immediately.

See Note 7, *Property and Equipment*, for further information.

Long-Lived Assets, including Finite-Lived Intangible Assets

Finite-lived intangible assets are stated at cost less accumulated amortization. Amortization of finite-lived acquired intangible assets is recognized on a straight-line basis, using the estimated useful lives of the assets of approximately two years to nine years in acquisition related amortization expense in the Consolidated Statements of Operations.

The Company reviews the recoverability of long-lived assets and finite-lived intangible assets whenever events or changes in circumstances indicate that the carrying value of such assets may not be recoverable. If the sum of the expected future undiscounted cash flows is less than the carrying amount of the asset, an impairment loss is recognized by reducing the recorded value of the asset to its fair value measured by future discounted cash flows. This analysis requires estimates of the amount and timing of projected cash flows and, where applicable, judgments associated with, among other factors, the appropriate discount rate. Such estimates are critical in determining whether any impairment charge should be recorded and the amount of such charge if an impairment loss is deemed to be necessary.

Contingencies

In the normal course of business, the Company is subject to various contingencies. Contingencies are recorded in the consolidated financial statements when it is probable that a liability will be incurred and the amount of the loss is reasonably estimable, or otherwise disclosed, in accordance with ASC 450, Contingencies. Significant judgment is required in both the determination of probability and the determination as to whether a loss is reasonably estimable. In the event the Company determines that a loss is not probable, but is reasonably possible, and it becomes possible to develop what the Company believes to be a reasonable range of possible loss, then the Company will include disclosures related to such matter as appropriate and in compliance with ASC 450. To the extent there is a reasonable possibility that the losses could exceed the amounts already accrued, the Company will, when applicable, adjust the accrual in the period the determination is made, disclose an estimate of the additional loss or range of loss, indicate that the estimate is immaterial with respect to its financial statements as a whole or, if the amount of such adjustment cannot be reasonably estimated, disclose that an estimate cannot be made. The Company is not currently involved in any legal proceedings of a material nature and, accordingly, the Company has not accrued estimated costs related to any legal claims.

Revenue Recognition

Beginning January 1, 2018 under ASC 606, the Company began to recognize revenue for billings less contractual allowances and estimated uncollectable amounts for all payer groups on the accrual basis based upon a thorough analysis of historical receipts (see Note 2, *Recent Accounting Standards*). The net amount derived and used for revenue recognition is referred to as the "net realizable value" or ("NRV") for the particular test and payer group from which reimbursement is received. This derived NRV will be evaluated quarterly or as needed and then applied to future periods until recalculated.

The Company completed its analysis of the ASC 606 impact and incorporated further analysis of first quarter 2018 collections from its commercial payer base in finalizing its ASC 606 adjustments. The impact of recording the cumulative catch-up adjustment under the modified retrospective method was $2.5 million, recorded as an increase to opening retained earnings on January 1, 2018. Prior periods have not been retrospectively adjusted. The Company also finalized its analysis of modified internal controls over financial reporting and the disclosures required starting with Form 10-Q for the first quarter of 2018.

Our clinical services derive its revenues from the performance of its proprietary assays or tests. The Company's performance obligation is fulfilled upon the completion, review and release of test results to the customer. The Company subsequently bills third-party payers or direct-bill payers for the tests performed. Revenue is recognized based on the estimated transaction price or NRV, which is determined based on historical collection rates by each payer category for each proprietary test offered by the Company. To the extent the transaction price includes variable consideration, for all third party and direct-bill payers and proprietary tests, the Company estimates the amount of variable consideration that should be included in the transaction price using the expected value method based on historical experience.

For our clinical services, we regularly review the ultimate amounts received from the third-party and direct-bill payers and related estimated reimbursement rates and adjust the NRV's and related contractual allowances accordingly. If actual collections and related NRV's vary significantly from our estimates, we will adjust the estimates of contractual allowances, which would affect net revenue in the period such variances become known. During 2019, the Company recorded a reduction to revenue of $3.5 million due to a change in estimate of the amounts to be collected from 2018 services.

For its pharma services, performance obligations are satisfied at a point in time as the Company processes samples delivered by the customer. Project level activities, including study setup and project management, are satisfied over the life of the contract. Revenues are recognized at a point in time when the test results or other deliverables are reported to the customer. Project level fee revenue is recognized ratably over the life of the contract. Some contracts have prepayments prior to services being rendered that are recorded as deferred revenue. These are for study services and setup management. Deferred revenue from pharma services contracts is recorded at fair value and represents payments received in advance of services rendered.

Cost of revenue

Cost of revenue consists primarily of the costs associated with operating our laboratories and other costs directly related to our tests. Personnel costs, which constitute the largest portion of cost of services, include all labor related costs, such as salaries, bonuses, fringe benefits and payroll taxes for laboratory personnel. Other direct costs include, but are not limited to, laboratory supplies, certain consulting expenses, royalty expenses, and facility expenses.

Stock-Based Compensation

The compensation cost associated with the granting of stock-based awards is based on the grant date fair value of the stock award. The Company recognizes the compensation cost, net of estimated forfeitures, over the shorter of the vesting period or the period from the grant date to the date when retirement eligibility is achieved. Forfeitures are initially estimated based on historical information and subsequently updated over the life of the awards to ultimately reflect actual forfeitures. As a result, changes in forfeiture activity can influence the amount of stock compensation cost recognized from period to period. The Company primarily uses the Black-Scholes option-pricing model to determine the fair value of stock options and stock appreciation rights ("SARs"). The determination of the fair value of stock-based payment awards is made on the date of grant and is affected by the Company's stock price as well as assumptions made regarding a number of complex and subjective variables. These assumptions include: expected stock price volatility over the term of the awards; actual and projected employee stock option exercise behaviors; the risk-free interest rate; and expected dividend yield. The fair value of restricted stock units, or RSUs, and restricted shares is equal to the closing stock price on the date of grant.

See Note 15, *Stock-Based Compensation,* for further information.

Treasury Stock

Treasury stock purchases are accounted for under the cost method whereby the entire cost of the acquired stock is recorded as treasury stock. Upon reissuance of shares, the Company records any difference between the weighted-average cost of such shares and any proceeds received as an adjustment to additional paid-in capital.

Leases

The Company determines if an arrangement contains a lease in whole or in part at the inception of the contract. Right-of-use ("ROU") assets represent the Company's right to use an underlying asset for the lease term while lease liabilities represent our obligation to make lease payments arising from the lease. All leases with terms greater than twelve months result in the recognition of a ROU asset and a liability at the lease commencement date based on the present value of the lease payments over the lease term. Unless a lease provides all of the information required to determine the implicit interest rate, we use our incremental borrowing rate based on the information available at the commencement date in determining the present value of the lease payments. We use the implicit interest rate in the lease when readily determinable.

Our lease terms include all non-cancelable periods and may include options to extend (or to not terminate) the lease when it is reasonably certain that we will exercise that option. Leases with terms of twelve months or less at the commencement date are expensed on a straight-line basis over the lease term and do not result in the recognition of an asset or liability. See Note 9, *Leases.*

Income taxes

Income taxes are based on income for financial reporting purposes calculated using the Company's expected annual effective rate and reflect a current tax liability or asset for the estimated taxes payable or recoverable on the current year tax return and expected annual changes in deferred taxes. Any interest or penalties on income tax are recognized as a component of income tax expense.

The Company accounts for income taxes using the asset and liability method. This method requires recognition of deferred tax assets and liabilities for expected future tax consequences of temporary differences that currently exist between tax bases and financial reporting bases of the Company's assets and liabilities based on enacted tax laws and rates. Deferred tax expense (benefit) is the result of changes in the deferred tax asset and liability. A valuation allowance is established, when necessary, to reduce the deferred income tax assets when it is more likely than not that all or a portion of a deferred tax asset will not be realized.

The Company operates in multiple tax jurisdictions and pays or provides for the payment of taxes in each jurisdiction where it conducts business and is subject to taxation. The breadth of the Company's operations and the complexity of the tax law require assessments of uncertainties and judgments in estimating the ultimate taxes the Company will pay. The final taxes paid are dependent upon many factors, including negotiations with taxing authorities in various jurisdictions, outcomes of tax litigation and resolution of proposed assessments arising from federal and state audits. Uncertain tax positions are recognized in the financial statements when it is more likely than not (i.e., a likelihood of more than fifty percent) that a position taken or expected to be taken in a tax return would be sustained upon examination by tax authorities that have full knowledge of all relevant information. A recognized tax position is then measured as the largest amount of benefit that is greater than fifty percent likely to be realized upon ultimate settlement. The Company adjusts accruals for unrecognized tax benefits as facts and circumstances change, such as the progress of a tax audit. However, any adjustments made may be material to the Company's consolidated results of operations or cash flows for a reporting period. Penalties and interest, if incurred, would be recorded as a component of current income tax expense.

Significant judgment is also required in evaluating the need for and magnitude of appropriate valuation allowances against deferred tax assets. Deferred tax assets are regularly reviewed for recoverability. The Company currently has significant deferred tax assets resulting from net operating loss carryforwards and deductible temporary differences, which should reduce taxable income in future periods, if generated. The realization of these assets is dependent on generating future taxable income.

Income (Loss) per Share

Basic earnings per common share are computed by dividing net income by the weighted average number of shares outstanding during the year including any unvested share-based payment awards that contain nonforfeitable rights to dividends. Diluted earnings per common share are computed by dividing net income by the sum of the weighted average number of shares outstanding and dilutive common shares under the treasury method. Unvested share-based payment awards that contain nonforfeitable rights to dividends or dividend equivalents (whether paid or unpaid), are participating securities and are included in the computation of earnings per share pursuant to the two-class method. As a result of the losses incurred in both 2019 and 2018, the potentially dilutive common shares have been excluded from the earnings per share computation for these periods because its inclusion would have been anti-dilutive. Additionally, preferred shares have been excluded in the denominator of the earnings per share computation, on an if-converted basis, as such shares would have been anti-dilutive.

2. Acquisition

On July 15, 2019, the Company entered into an Asset Purchase Agreement to acquire certain assets and assumed certain liabilities relating to Cancer Genetics, Inc.'s ("CGI") biopharma business ("BioPharma") for $23.5 million less certain closing adjustments of $1.98 million (the "Base Purchase Price"). At the closing the Company used the proceeds from an initial tranche of preferred stock financing and paid $13.8 million. Additionally, the Company issued a subordinated seller note to CGI in the amount of $7,692,300.

The BioPharma business (presently known as Interpace Pharma Solutions, Inc. or "pharma services") provides pharmaceutical and biotech companies and non-profit entities performing clinical trials with lab testing services for patient stratification and treatment selection through an extensive suite of molecular and biomarker-based testing services, DNA- and RNA- extraction and customized assay development and trial design consultation.

The Base Purchase Price was subject to two additional adjustments following the closing: for the finalized net worth (assets less liabilities) of BioPharma as of June 30, 2019 (the "NWA"), subject to a cap of $775,000, and for certain older accounts receivable, in the aggregate amount of approximately $830,000, still uncollected as of December 31, 2019 (the "ARA"). Any amounts due to the Company under the NWA were to be set off against the Excess Consideration Note and any amounts due to the Company under the ARA were to be either set off against the Excess Consideration Note or, if it is no longer outstanding, satisfied through an AR Holdback (as defined in the Asset Purchase Agreement) mechanism, in each case as further set forth in the Asset Purchase Agreement. Additionally, an indemnification holdback of $735,000 was established as an offset for any potential claims against the Company related to the transaction. The expiration period for the notification of any third-party claims was set at January 15, 2020. On October 18, 2019, a payment of $6,024,489 was made in settlement of the note less remaining holdbacks of $887,858, $735,000 for the Indemnification Holdback and $152,858 for the remaining AR Holdback. As of April 21, 2020, the Company is obligated to pay CGI an additional $735,000 for funds withheld from the Excess Consideration Note to satisfy indemnification obligations under the Asset Purchase Agreement.

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.

In connection with the transaction, the Company has preliminarily recorded $8.3 million of goodwill and $7.3 million of finite lived intangible assets. Finite lived intangible assets have a combined weighted-average amortization period of 8.4 years, which consists of ten years for tradenames and eight years for customer relationships. Goodwill results largely from 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. See Note 8, *Goodwill and Other Intangible Assets,* for more information. Transaction expenses of approximately $2.5 million incurred in connection with the acquisition was expensed as incurred.

The reconciliation of consideration given for BioPharma to the preliminary allocation of the purchase price of assets and liabilities acquired based on their relative fair values is as follows:

Cash		$ 13,829
Subordinated note payable		6,822
Total consideration		$ 20,651
Assets acquired		
Accounts receivable		$ 3,731
Accrued revenue		289
Lab supplies		877
Prepaid expenses		266
Property and equipment		6,412
Operating lease assets		2,187
Acquired identifiable intangible assets:		
Trademarks and trade name	1,600	
Customer relationships	5,700	
Total acquired identifiable intangible assets		7,300
Goodwill		8,273
Total assets acquired		29,335
Liabilities assumed		
Accounts payable		(4,535)
Accrued liabilities		(435)
Deferred revenue		(1,076)
Operating lease liabilities		(2,187)
Finance lease liabilities		(451)
Total liabilities assumed		(8,684)
Net assets acquired		$ 20,651

The estimated fair values of assets acquired and liabilities assumed are considered preliminary and are based on the most recent information available. The provisional measurements of fair value set forth above are subject to change. We expect to finalize the valuation as soon as practicable, but no later than one-year from the acquisition date.

The following unaudited pro forma consolidated revenues for year ended December 31, 2019 and 2018 assume that the Company had acquired Biopharma Solutions as of January 1, 2018. The pro forma revenues include estimates and assumptions which management believes are reasonable. However, pro forma revenues are not necessarily indicative of the revenues that would have occurred if the acquisition had been consummated as of the date indicated, nor are they necessarily indicative of future revenues.

	Years Ended	
	December 31, 2019	December 31, 2018
Revenue	$ 31,722	$ 37,218

The BioPharma business had not historically been accounted for as a separate entity, subsidiary or division of CGI. In addition, stand-alone financial statements related to BioPharma have not been prepared previously as CGI's financial system was not designed to provide complete financial information of BioPharma. Therefore, the Company was not able to estimate the pro forma impact to net loss or the net loss per share of BioPharma for the years ended December 31, 2019 and 2018.

3. Recent Accounting Standards

Recently adopted standards

In February 2016, the FASB issued ASU 2016-02, Leases (Topic 842), which is effective for public companies for annual reporting periods beginning after December 15, 2018, including interim periods within those fiscal years. Topic 842 establishes a right-of-use model that requires a lessee to record a right-of-use asset and a lease liability, measured on a discounted basis, on the balance sheet for all leases with terms longer than 12 months. Leases are to be classified as either finance or operating leases, with such classification affecting the pattern or expense recognition in the statement of operations. We adopted this new standard as of January 1, 2019, by using the alternative modified transition method. See Note 9, *Leases*, for more details.

Standards not yet effective

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. Management is evaluating ASU 2017-04 to determine the impact on the consolidated financial statements.

In June 2016, the FASB issued ASU No. 2016-13, Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments, which requires the measurement and recognition of expected credit losses for financial assets held at amortized cost. This ASU is effective for interim and annual reporting periods beginning after December 15, 2019. This ASU is required to be adopted using the modified retrospective basis, with a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance of this ASU is effective. Based upon the level and makeup of our financial asset portfolio, past loan loss activity and current known activity regarding our outstanding loans, we do not expect that this ASU will have a material impact on our consolidated financial statements.

In January 2017, the FASB issued ASU No. 2017-04, Intangibles-Goodwill and Other (Topic 350) (ASU 2017-04). ASU 2017-04 eliminates step two from the goodwill impairment test, thereby eliminating the requirement to calculate the implied fair value of a reporting unit. ASU 2017-04 will require us to perform our annual goodwill impairment test by comparing the fair value of our reporting units to the carrying value of those units. If the carrying value exceeds the fair value, we will be required to recognize an impairment charge; however, the impairment charge should not exceed the amount of goodwill allocated to such reporting unit. ASU 2017-04 is required to be implemented on a prospective basis for fiscal years beginning after December 15, 2019. We do not expect that the requirements of ASU 2017-04 will have a material impact on our consolidated financial statements.

In December 2019, the FASB issued ASU No. 2019-12, Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes ("ASU 2019-12"). ASU 2019-12 will simplify the accounting for income taxes by removing certain exceptions to the general principles in Topic 740. The amendments also improve consistent application of and simplify GAAP for other areas of Topic 740 by clarifying and amending existing guidance. We do not expect that the requirements of ASU 2017-04 will have a material impact on our consolidated financial statements.

4. Liquidity

As of December 31, 2019, the Company had cash and cash equivalents of $2.3 million, net accounts receivable of $10.2 million, total current assets of $16.4 million and total current liabilities of $17.3 million. For the year ended December 31, 2019, the Company had a net loss of $26.7 million and cash used in operating activities was $19.0 million.

We do not expect to generate positive cash flows from operations for the year ending December 31, 2020. We intend to meet our ongoing capital needs by using our available cash, proceeds under the Securities Purchase and Exchange Agreement, additional borrowings under the Line of Credit as well as increasing our line of credit limit by an additional $4 million as a result of the additional accounts receivable acquired in July 2019 as part of our acquisition of pharma services (which requires a modification to the bank agreement and approval by SVB, as well as approval by our preferred shareholders), revenue growth and margin improvement, collecting accounts receivable, containing costs as well as exploring other financing options. Management believes that the Company has sufficient cash on hand and available to sustain operations through at least April 23, 2021. However, there is no guarantee that additional capital can be raised to fund our future operations.

In September 2019, we entered into the Equity Distribution Agreement (the "Agreement") with Oppenheimer & Co. Inc., as sales agent (the "Agent"), pursuant to which we may, from time to time, issue and sell shares of our common stock in an aggregate offering price of up to $4.8 million through the Agent. See Note 13, *Equity,* for more details. As of December 31, 2019, 97,817 shares (as adjusted for the reverse stock split) of common stock were sold for net proceeds of approximately $0.2 million.

In January 2020, we sold 20,000 preferred shares to investors, led by 1315 Capital, for net proceeds of approximately $19.5 million. See Note 21*Subsequent Events,* for more detail.

In November 2018, the Company entered into up to a $4.0 million secured Line of Credit facility including a 3-year term loan for $850,000 with Silicon Valley Bank ("SVB"). The proceeds of the term loan are expected to be used for laboratory capital expenditures and will be repaid monthly. The balance of the Line of Credit is available for working capital purposes as a revolving line of credit and has a three-year term. The borrowing limit of the revolving line of credit is the lower of 80% of the Company's eligible accounts receivable (as adjusted by SVB) and the aggregate amount of cash collections with respect to accounts receivable during the three prior calendar months. Term loan outstanding amounts incur interest at a rate per annum equal to the greater of the Wall Street Journal Prime Rate (the "Prime Rate") and 5.00%. Revolving Line outstanding amounts incur interest at a rate per annum equal to the Prime Rate plus 0.5%. As of December 31, 2019, $3.0 million was outstanding.

See Note 21, *Subsequent Events*, regarding the adverse impact of the COVID-19 pandemic on our results of operations, cash flows and financial condition for the first and second quarters of fiscal 2020 and possibly beyond.

During April 2020, the Company applied for various federal stimulus loans, grants and advances made available under Title 1 of the Coronavirus Aid, Relief, and Economic Security (CARES) Act, including an approximate $3.5 million loan request under the Small Business Administration (SBA) Paycheck Protection Program (PPP), an approximate $0.65 million grant from the Department of Health and Human Services (HSS), and approximately $2.1 million in advances under the Centers for Medicare & Medicaid Services (CMS) accelerated and advance payment program. Each of these loans, grants and advances require certain certifications by the Company and impose specific limitations on the use of the proceeds.

As of April 21, 2020, we received $2.1 million in advances under the CMS accelerated and advance payment program, as well as the $0.65 million HSS grant. The CMS advance will be offset against future Medicare billings of the Company, and the HSS grant is subject to certain conditions regarding its use, including developing coronavirus and serology tests. There is no guarantee that any other loans, grants or advances will be approved. As of April 21, 2020, the Company's PPP loan has not yet been approved, pending new legislation increasing the pool. The PPP provides for loans to qualifying businesses for amounts up to 2.5 times of the average monthly payroll expenses of the qualifying business. The PPP loans and accrued interest are forgivable after eight weeks as long as the borrower uses the loan proceeds for eligible purposes, including payroll, benefits, rent and utilities, and maintains its payroll levels. The amount of loan forgiveness will be reduced if the borrower terminates employees or reduces salaries during the eight-week period. The unforgiven portion of the PPP loan is payable over two years at an interest rate of 1%, with a deferral of payments for the first six months. If the Company is successful in obtaining a PPP loan, we intend to use the proceeds for purposes consistent with the PPP and expect to meet the conditions for forgiveness of the loan.

As of April 21, 2020 we have approximately $18.4 million of cash on hand. Also as of April 21, 2020, the Company has no further availability on its credit facility, but is in

the process of completing an agreement with SVB to expand the credit facility from $4.0 million to $8.0 million. No assurance can be given that such an expansion agreement will be entered into.

5. Discontinued Operations

The Company accounts for business dispositions and its businesses held for sale in accordance with ASC 205-20, Discontinued Operations. ASC 205-20 requires the results of operations of business dispositions to be segregated from continuing operations and reflected as discontinued operations in current and prior periods.

The components of liabilities classified as discontinued operations relate to Commercial Services and consist of the following as of December 31, 2019 and December 31, 2018:

	December 31, 2019	December 31, 2018
Accounts payable	$ -	$ 192
Accrued liabilities	766	726
Current liabilities from discontinued operations	766	918
Total liabilities	$ 766	$ 918

Company management is currently winding down certain legal entities which are no longer active within its corporate structure, none of which falls under the criteria of discontinued operations. However, this activity may result in the restructuring of past liabilities, which may result in further reductions based upon new estimates and third-party evaluations.

6. Fair Value Measurements

Cash and cash equivalents, accounts receivable, and accounts payable approximate fair value due to their relative short-term nature. The Company's financial liabilities reflected at fair value in the consolidated financial statements include contingent consideration and warrant liability. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. In determining fair value, the Company uses various methods including market, income and cost approaches. Based on these approaches, the Company often utilizes certain assumptions that market participants would use in pricing the asset or liability, including assumptions about risk and/or the risks inherent in the inputs to the valuation technique. These inputs can be readily observable, market-corroborated, or generally unobservable inputs. The Company utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs. Based upon observable inputs used in the valuation techniques, the Company is required to provide information according to the fair value hierarchy. The fair value hierarchy ranks the quality and reliability of the information used to determine fair values into three broad levels as follows:

Level 1: Valuations for assets and liabilities traded in active markets from readily available pricing sources for market transactions involving identical assets or liabilities.

Level 2: Valuations for assets and liabilities traded in less active dealer or broker markets. Valuations are obtained from third-party pricing services for identical or similar assets or liabilities.

Level 3: Valuations for assets and liabilities include certain unobservable inputs in the assumptions and projections used in determining the fair value assigned to such assets or liabilities.

In instances where the determination of the fair value measurement is based on inputs from different levels of the fair value hierarchy, the level in the fair value hierarchy within which the entire fair value measurement falls is based on the lowest level input that is significant to the fair value measurement in its entirety. The Company's assessment of the significance of a particular input to the fair value measurement in its entirety requires judgment and considers factors specific to the asset or liability. The valuation methodologies used for the Company's financial instruments measured on a recurring basis at fair value, including the general classification of such instruments pursuant to the valuation hierarchy, is set forth in the tables below.

	As of December 31, 2019		Fair Value Measurements As of December 31, 2019		
	Carrying Amount	Fair Value	Level 1	Level 2	Level 3
Liabilities:					
Contingent consideration:					
Asuragen [1]	$ 2,893	$ 2,893	$ -	$ -	$ 2,893
Other long-term liabilities:					
Warrant liability [2]	82	82	-	-	82
	$ 2,975	$ 2,975	$ -	$ -	$ 2,975

	As of December 31, 2018		Fair Value Measurements As of December 31, 2018		
	Carrying Amount	Fair Value	Level 1	Level 2	Level 3
Liabilities:					
Contingent consideration:					
Asuragen	$ 3,127	$ 3,127	$ -	$ -	$ 3,127
Other long-term liabilities:					
Warrant liability	361	361	-	-	361
	$ 3,488	$ 3,488	$ -	$ -	$ 3,488

In connection with the acquisition of certain assets from Asuragen, the Company recorded contingent consideration related to contingent payments and other revenue-based payments. The Company determined the fair value of the contingent consideration based on a probability-weighted income approach derived from revenue estimates. The fair value measurement is based on significant inputs not observable in the market and thus represents a Level 3 measurement.

	December 31, 2018	Payments	Accretion	Cancellation of Obligation/ Conversions Exercises	Adjustment to Fair Value/ Mark to Market	December 31, 2019
Asuragen	$ 3,127	$ (630)	$ 440	$ -	$ (44)	$ 2,893
Underwriters Warrants	361	-	-	-	(279)	82
	$ 3,488	$ (630)	$ 440	$ -	$ (323)	$ 2,975

Certain of the Company's non-financial assets, such as other intangible assets are measured at fair value on a nonrecurring basis when there is an indicator of impairment and recorded at fair value only when an impairment charge is recognized.

7. Property and Equipment

Property and equipment consisted of the following as of December 31, 2019 and 2018:

	December 31,	
	2019	2018
Furniture and fixtures	$ 242	$ 62
Lab and office equipment	6,353	1,686
Computer equipment	339	172
Internal-use software	1,276	113
Leasehold improvements	506	175
Property and equipment	8,716	2,208
Less accumulated depreciation and amortization	(1,902)	(1,371)
Net property and equipment	$ 6,814	$ 837

Depreciation and amortization expense from continuing operations was approximately $0.5 million and $0.2 million for the years ended December 31, 2019 and 2018, respectively. There was internal-use software amortization expense included in depreciation and amortization expense in 2019 of approximately six thousand. As of December 31, 2019, capitalized external-use software was fully amortized.

8. Goodwill and Other Intangible Assets

Goodwill is attributable to the acquisition of the Biopharma business from CGI in July 2019. The carrying value of the intangible assets acquired was $15.6 million, with goodwill of approximately $8.3 million and identifiable intangible assets of approximately $7.3 million. The goodwill balance at December 31, 2019 was $8.4 million. The net carrying value of the identifiable intangible assets as of December 31, 2019 and December 31, 2018 is as follows:

	Life (Years)	As of December 31, 2019 Carrying Amount	As of December 31, 2018 Carrying Amount
Asuragen acquisition:			
Thyroid	9	$ 8,519	$ 8,519
RedPath acquisition:			
Pancreas test	7	16,141	16,141
Barrett's test	9	18,351	18,351
BioPharma acquisition:			
Trademarks	10	1,600	-
Customer relationships	8	5,700	-
CLIA Lab	2.3	$ 609	$ 609
Total		$ 50,920	$ 43,620
Accumulated Amortization		$ (17,419)	$ (13,767)
Net Carrying Value		$ 33,501	$ 29,853

The following table displays a roll forward of the carrying amount of goodwill from January 1, 2018 to December 31, 2019:

	Carrying Amount
Balance as of January 1, 2018	$ -
Balance as of December 31, 2018	-
Goodwill acquired	8,273
Adjustments	160
Balance as of December 31, 2019	$ 8,433

Amortization expense was approximately $3.7 million and $3.3 million for the years ended December 31, 2019 and 2018, respectively. Estimated amortization expense for the next five years is as follows:

2020	2021	2022	2023	2024
$ 5,145	$ 5,781	$ 3,859	$ 3,859	$ 3,149

9. Leases

In February 2016, the FASB issued ASU 2016-02, Leases (Topic 842), which establishes a ROU model that requires a lessee to record a ROU asset and a lease liability, measured on a discounted basis, on the balance sheet for all leases with terms longer than 12 months. Effective January 1, 2019, the Company adopted the provisions of Topic 842 using the alternative modified transition method, with a cumulative effect adjustment to the opening balance of accumulated deficit on the date of adoption, and prior periods not restated, as allowed under the provisions of Topic 842. The Company also elected to use the practical expedients permitted under the transition guidance of Topic 842, which provides for the following: the carryforward of the Company's historical lease classification, no requirement for reassessment of whether an expired or existing contract contains an embedded lease, no reassessment of initial direct costs for any leases that exist prior to the adoption of the new standard, and the election to consolidate lease and non-lease components. The Company also elected to keep all leases with an initial term of 12 months or less off the balance sheet.

The Company recorded $2.4 million of right-of-use lease assets and $2.5 million of lease liabilities upon adoption, primarily relating to rentals of space for our corporate headquarters and laboratories, as well as equipment leases, all under operating leases. In addition, the Company recorded a cumulative adjustment to opening accumulated deficit of $0.1 million. With the acquisition of the Biopharma business of CGI in 2019, the Company added $2.2 million of operating lease assets and liabilities and $0.5 million of finance lease assets and liabilities to its balance sheet. Finance lease assets are included in fixed assets, net of accumulated depreciation.

The table below presents the lease-related assets and liabilities recorded in the Consolidated Balance Sheet:

	Classification on the Balance Sheet	December 31, 2019
Assets		
Financing lease assets	Property and equipment, net	$ 998
Operating lease assets	Operating lease right of use assets	3,892
Total lease assets		$ 4,890
Liabilities		
Current		
Financing lease liabilities	Other accrued expenses	$ 184
Operating lease liabilities	Other accrued expenses	1,321
Total current lease liabilities		$ 1,505
Noncurrent		
Financing lease liabilities	Other long-term liabilities	123
Operating lease liabilities	Operating lease liabilities, net of current portion	2,591
Total long-term lease liabilities		2,714
Total lease liabilities		$ 4,219

The weighted average remaining lease term for the Company's operating leases was 2.7 years as of December 31, 2019 and the weighted average discount rate for those leases was 6.0%. The Company's operating lease expenses are recorded within cost of revenue and general and administrative expenses.

The table below reconciles the undiscounted cash flows to the lease liabilities recorded on the Company's Condensed Consolidated Balance Sheet as of December 31, 2019:

	Operating Leases	Financing Leases
2020	1,472	226
2021	1,295	120
2022	1,223	13
2023	344	-
Total minimum lease payments	4,334	359
Less: amount of lease payments representing effects of discounting	418	52
Present value of future minimum lease payments	3,916	307
Less: current obligations under leases	1,321	184
Long-term lease obligations	$ 2,595	$ 123

10. Retirement Plans

The Company offers an employee 401(k) saving plan. Under the Interpace Biosciences, Inc. 401(k) Plan, employees may contribute up to 50% of their pre- or post-tax base compensation. The Company currently offers a safe harbor matching contribution equal to 100% of the first 3% of the participant's contributed base salary plus 50% of the participant's base salary contributed exceeding 3% but not more than 5%. Participants are not allowed to invest any of their 401(k) funds in the Company's common stock. The Company's total contribution expense from continuing operations related to the 401(k) plan for the years ended December 31, 2019 and December 31, 2018 was approximately $0.3 million and $0.2 million, respectively.

11. Accrued Expenses and Other Long-Term Liabilities

Other accrued expenses consisted of the following as of December 31, 2019 and 2018:

	December 31, 2019	December 31, 2018
Accrued royalties	$ 1,934	$ 1,399
Indemnification liability	-	875
Contingent consideration	502	434
Operating lease liability	1,321	-
Financing lease liability	184	-
Deferred revenue	457	-
Payable to CGI	888	-
Accrued sales and marketing - diagnostics	197	-
Accrued lab costs - diagnostics	163	150
Accrued professional fees	1,399	701
Taxes payable	403	285
Unclaimed property	565	565
All others	1,366	682
Total other accrued expenses	$ 9,379	$ 5,091

Other long-term liabilities consisted of the following as of December 31, 2019 and 2018:

	December 31, 2019	December 31, 2018
Warrant liability	$ 82	$ 361
Uncertain tax positions	4,081	3,838
Deferred revenue	269	-
Other	141	120
Total other long-term liabilities	$ 4,573	$ 4,319

12. Commitments and Contingencies

The Company leases facilities and certain equipment under agreements classified as operating leases, which expire at various dates through June 2023. Substantially all of the property leases provide for increases based upon use of utilities and landlord's operating expenses as well as pre-defined rent escalations. Total expense from continuing operations under these agreements for the years ended December 31, 2019 and 2018 was approximately $1.3 million and $0.7 million, respectively.

As of December 31, 2019, contractual obligations with terms exceeding one year and estimated minimum future rental payments required by non-cancelable operating leases with initial or remaining lease terms exceeding one year are as follows:

	Total	Less than 1 Year	1 to 3 Years	3 to 5 Years	After 5 Years
Operating lease obligations	$ 4,334	$ 1,472	$ 2,518	$ 344	$ -
Total	$ 4,334	$ 1,472	$ 2,518	$ 344	$ -

Litigation

Due to the nature of the businesses in which the Company is engaged it is subject to certain risks. Such risks include, among others, risk of liability for personal injury or death to persons using products the Company promotes or commercializes. There can be no assurance that substantial claims or liabilities will not arise in the future due to the nature of the Company's business activities and recent increases in litigation related to healthcare products.

The Company could also be held liable for errors and omissions of its employees in connection with the services it performs that are outside the scope of any indemnity or insurance policy. The Company could be materially adversely affected if it were required to pay damages or incur defense costs in connection with a claim that is outside the scope of an indemnification agreement; if the indemnity, although applicable, is not performed in accordance with its terms; or if the Company's liability exceeds the amount of applicable insurance or indemnity.

13. Equity

Public Offering

On January 25, 2019, the Company entered into an underwriting agreement (the "Underwriting Agreement") with H.C. Wainwright & Co., LLC ("Wainwright") with respect to the issuance and sale of an aggregate of 933,334 shares (the "Firm Shares") of the Company's common stock in an underwritten public offering. Pursuant to the Underwriting Agreement, the Company also granted Wainwright an option, exercisable for 30 days, to purchase an additional 140,000 shares of common stock. The option expired unexercised. The Firm Shares were offered to the public at a price of $7.50 per Share. Wainwright purchased the Firm Shares from the Company pursuant to the Underwriting Agreement at an effective price of $6.975 per share. The share and per share numbers discussed above have been adjusted for the reverse stock split which took place in January 2020.

The Company received net proceeds, after deducting underwriter discounts and commissions and other expenses related to the offering, in the amount of approximately $5.9 million. The Company used the net proceeds from the offering for working capital, capital expenditures, business development and research and development expenditures, and the acquisition (in part) of Biopharma Business.

Preferred Stock Issuance

The Company entered into a Securities Purchase Agreement (the "Securities Purchase Agreement") on July 15, 2019 with Ampersand 2018 Limited Partnership (the "Investor"), a fund managed by Ampersand Capital Partners, providing for the issuance and sale to the Investor of up to an aggregate of $27.0 million in convertible preferred stock, par value $0.01 per share, of the Company consisting of two series, Series A ("Series A") and Series A-1 ("Series A-1" and together with the Series A, the "Preferred Stock"), both at an issuance price per share of 100 thousand (the "Stated Value"), to be funded at up to two different closings (the "Investment").

The initial closing, which was consummated promptly after the execution of the Securities Purchase Agreement, involved the issuance of 60 newly created shares of Series A at an aggregate purchase price of $6.0 million, and 80 newly created shares of Series A-1 at an aggregate purchase price of $8.0 million, for net proceeds of approximately $13.1 million.

The Securities Purchase Agreement contemplated a second closing (the "Second Closing"), which would only be effected following the fulfillment to the Investor's satisfaction of customary conditions, including, among others, the approval by the stockholders of the Company, as required under the rules of the Nasdaq Stock Market LLC (the "Nasdaq Listing Rules"), of the issuance of shares of common stock upon conversion of the Preferred Stock in excess of the aggregate number of shares of common stock that the Company may issue upon conversion of the Preferred Stock without breaching its obligations under the Nasdaq Listing Rules (the "Stockholder Approval"). The terms of the Series A-1 provided that each share of Series A-1 would automatically convert into one share of Series A upon the Company obtaining the Stockholder Approval. See Note 21, *Subsequent Events,* for additional information.

Stockholder Approval was obtained on October 10, 2019 for the Securities Purchase Agreement discussed above and each share of Series A-1 issued to the Investor at the initial closing automatically converted into one share of Series A on that day.

On October 16, 2019, the Company and the Investor consummated the Second Closing. At the Second Closing, the Company issued to the Investor 130 newly created shares of Series A at an aggregate gross purchase price of $13.0 million. The Company used the proceeds from the Second Closing to make the maturity date payment, subject to certain holdbacks, with respect to the promissory note issued by a subsidiary of the Company to CGI, and expects to use the remaining proceeds for general corporate purposes, including the integration of the BioPharma Business. The Company issued the aforementioned note in connection with the acquisition of its BioPharma Business.

The Series A was offered and sold pursuant to an exemption from registration under Section 4(a)(2) of the Securities Act of 1933, as amended (the "Securities Act") and Rule 506 of Regulation D promulgated thereunder. The shares to be issued upon conversion of the Series A have not been registered under the Securities Act and may not be offered or sold in the United States in the absence of an effective registration statement or exemption from the registration requirements.

As of December 31, 2019 and 2018, there were 270 and zero issued and outstanding shares of preferred stock, respectively.

ATM program

On September 20, 2019, the Company entered into an Equity Distribution Agreement (the "Agreement") with Oppenheimer & Co. Inc., as sales agent (the "Agent"), pursuant to which the Company may, from time to time, issue and sell shares of its Common Stock, at an aggregate offering price of up to $4.8 million (the "Shares") through the Agent. Under the terms of the Agreement, the Agent may sell the Shares at market prices by any method that is deemed to be an "at the market offering" as defined in Rule 415 under the Securities Act, as amended.

Subject to the terms and conditions of the Agreement, the Agent will use its commercially reasonable efforts to sell the Shares from time to time, based upon the Company's instructions. The Company has no obligation to sell any of the Shares, and may at any time suspend sales under the Agreement or terminate the Agreement in accordance with its terms. The Company has provided the Agent with customary indemnification rights, and the Agent will be entitled to a fixed commission of 3.0% of the aggregate gross proceeds from the Shares sold. The Agreement contains customary representations and warranties, and the Company is required to deliver customary closing documents and certificates in connection with sales of the Shares. As of December 31, 2019, 97,817 shares (as adjusted for the reverse stock split) have been sold for net proceeds to the Company of approximately $0.2 million.

As a result of the January 15, 2020 Investment and Exchange, additional Shares may no longer be sold under the ATM arrangement without a majority approval by the holders of the Series B Preferred Stock in accordance with the Amended and Restated Investor Rights Agreement entered into on that date

14. Warrants

Warrants outstanding and warrant activity for the year ended December 31, 2019 are as follows:

Description	Classification	Exercise Price	Expiration Date	Warrants Issued	Warrants Exercised	Warrants Cancelled/ Expired	Balance December 31, 2018	Balance December 31, 2019
Private Placement Warrants, issued January 25, 2017	Equity	$ 46.90	June 2022	85,500	-	-	85,500	85,500
RedPath Warrants, issued March 22, 2017	Equity	$ 46.90	September 2022	10,000	-	-	10,000	10,000
Underwriters Warrants, issued June 21, 2017	Liability	$ 13.20	December 2022	57,500	-	(4,000)	53,500	53,500
Base & Overallotment Warrants, issued June 21, 2017	Equity	$ 12.50	June 2022	1,437,500	(567,286)	-	870,214	870,214
Vendor Warrants, issued August 6, 2017	Equity	$ 12.50	August 2020	15,000	-	-	15,000	15,000
Warrants issued October 12, 2017	Equity	$ 18.00	April 2022	320,000	-	-	320,000	320,000
Underwriters Warrants, issued January 25, 2019	Equity	$ 9.40	January 2022	65,434	-	-	-	65,434
				1,990,934	(567,286)	(4,000)	1,354,214	1,419,648

15. Stock-Based Compensation

The Company's stock-incentive program is a long-term retention program that is intended to attract, retain and provide incentives for talented employees, officers and directors, and to align stockholder and employee interests. Currently, the Company is able to grant options, stock appreciation rights ("SARs") and restricted shares from the Interpace Biosciences, Inc. 2019 Equity Incentive Plan. No new grants may be made under the Company's prior stock incentive plan, the Interpace Diagnostics Group, Inc. (now known as Interpace Biosciences, Inc.) Amended and Restated 2004 Stock Award and Incentive Plan (the "2004 Plan"). Unless earlier terminated by action of the Company's board of directors, the 2004 Plan will remain in effect until such time as no stock remains available for delivery and the Company has no further rights or obligations under the 2004 Plan with respect to outstanding awards thereunder.

Historically, stock options have been granted with an exercise price equal to the market value of the common stock on the date of grant, expire 10 years from the date they are granted, and generally vested over a one to three-year period for employees and members of the Board. Upon exercise, new shares will be issued by the Company. The Company granted stock options in 2017 which vest monthly over a one-year period. SARs are generally granted with a grant price equal to the market value of the common stock on the date of grant, vest one-third each year on the anniversary of the date of grant and expire five years from the date of grant. The restricted shares and restricted stock units ("RSUs") granted to employees generally have a three-year graded vesting period and are subject to accelerated vesting and forfeiture under certain circumstances. Restricted shares and RSUs granted to Board members generally have a three-year graded vesting period and are subject to accelerated vesting and forfeiture under certain circumstances.

The Company primarily uses the Black-Scholes option-pricing model to determine the fair value of stock options and SARs. The determination of the fair value of stock-based payment awards on the date of grant using an option-pricing model is affected by the Company's stock price as well as assumptions regarding a number of complex and subjective variables. These variables include the Company's expected stock price volatility over the term of the awards, actual and projected employee stock option exercise behaviors, risk-free interest rate and expected dividends. Expected volatility is based on historical volatility. As there is no trading volume for the Company's options, implied volatility is not representative of the Company's current volatility so the historical volatility of the Company's common stock is determined to be more indicative of the Company's expected future stock performance. The expected life is determined using the safe-harbor method. The Company expects to use this simplified method for valuing employee options and SARs grants until more detailed information about exercise behavior becomes available over time. The Company bases the risk-free interest rate on U.S. Treasury zero-coupon issues with remaining terms similar to the expected term on the options or SARs. The Company does not anticipate paying any cash dividends in the foreseeable future and therefore uses an expected dividend yield of zero in the option valuation model. The Company is required to estimate forfeitures at the time of grant and revise those estimates in subsequent periods if actual forfeitures differ from those estimates. The Company uses historical data to estimate pre-vesting option forfeitures and records stock-based compensation expense only for those awards that are expected to vest. The Company recognizes compensation cost, net of estimated forfeitures, arising from the issuance of stock options and SARs on a straight-line basis over the vesting period of the grant. In October 2019, the Company's employee stock purchase plan was approved by shareholders. This plan will be implemented in 2020.

The estimated compensation cost associated with the granting of restricted stock and restricted stock units is based on the fair value of the Company's common stock on the date of grant. The Company recognizes the compensation cost, net of estimated forfeitures, arising from the issuance of restricted stock and restricted stock units on a straight-line basis over the shorter of the vesting period or the period from the grant date to the date when retirement eligibility is achieved. The share and per share numbers in the following tables have been adjusted for the reverse stock split which took place in January 2020.

The following table provides the weighted average assumptions used in determining the fair value of the stock options granted during the years ended December 31, 2019 and December 31, 2018.

	December 31, 2019	December 31, 2018
Risk-free interest rate	2.34%	2.71%
Expected life	5.9 years	6.0 years
Expected volatility	128.58%	127.18%
Dividend yield	-	-

The weighted-average fair value of stock options granted during the year ended December 31, 2019 was estimated to be $8.50. The weighted-average fair value of stock options granted during the year ended December 31, 2018 was estimated to be $9.30. There were no options or SARs exercised in 2019 or 2018. Historically, shares issued upon the exercise of options have been new shares and have not come from treasury shares.

The impact of RSUs and stock options on net loss for the years ended December 31, 2019 and 2018 is as follows:

	2019	2018
RSUs	$ 243	$ 301
Options	722	1,433
Total stock-based compensation expense	$ 965	$ 1,734

A summary of stock option and SARs activity for the year ended December 31, 2019, and changes during such year, is presented below:

	Shares	Weighted- Average Grant Price	Weighted-Average Remaining Contractual Period (in years)	Aggregate Intrinsic Value
Outstanding at January 1, 2019	288,950	$ 21.40	8.83	$ -
Granted	132,545	9.50	9.30	-
Exercised	-			
Forfeited or expired	(5,817)	387.10		-
Outstanding at December 31, 2019	415,678	12.50	8.45	-
Exercisable at December 31, 2019	202,206	15.20	7.91	-
Vested and expected to vest	402,921	12.60	8.43	-

A summary of the status of the Company's non-vested options for the year ended December 31, 2019, and changes during such year, is presented below:

	Shares	Weighted- Average Grant Date Fair Value
Non-vested at January 1, 2019	134,089	$ 9.30
Granted	132,545	8.50
Vested	(53,150)	9.00
Forfeited	-	-
Non-vested at December 31, 2019	213,484	$ 8.80

The aggregate fair value of SARs and options vested during the years ended December 31, 2019 and 2018 was $0.5 million and $1.2 million, respectively. The weighted-average grant date fair value of options vested during the year ended December 31, 2018 was $1.40.

A summary of the Company's non-vested shares of restricted stock units for the year ended December 31, 2019, and changes during such year, is presented below:

	Shares	Weighted- Average Grant Date Fair Value	Average Remaining Vesting Period (in years)	Aggregate Intrinsic Value
Non-vested at January 1, 2019	36,224	$ 11.70	1.37	$ 289,758
Granted	27,637	9.80	-	-
Vested	(14,486)	13.70	-	-
Forfeited	-	-	-	-
Non-vested at December 31, 2019	49,375	$ 10.00	1.11	$ 246,875

The aggregate fair value of restricted stock units vested during each of the years ended December 31, 2019 and 2018 was $0.2 million and $0.1 million, respectively.

As of December 31, 2019, there was approximately $1.6 million of total unrecognized compensation cost, net of estimated forfeitures, related to unvested stock options and restricted stock units.

16. Revenue Sources

The Company's clinical services customers consist primarily of physicians, hospitals and clinics. Its revenue channels include Medicare, Medicare Advantage, Medicaid, Client Billings (hospitals, etc.), and commercial payers. The following sets forth the net revenue generated by revenue channel accounted for more than 10% of the Company's revenue from continuing operations during the years ended December 31, 2019 and 2018, respectively. For the years ended December 31, 2019 and December 31, 2018, revenue from Medicare was approximately 44% and 41% of total revenue, respectively.

	Years Ended December 31,	
Customer	2019	2018
Medicare	$ 10,605	$ 9,114
Commercial Payors	$ 7,589	$ 4,079
Client Billings	$ 3,521	$ 3,621
Medicare Advantage	$ 1,912	$ 3,011

17. Income Taxes

The benefit from income taxes on continuing operations for the years ended December 31, 2019 and 2018 is comprised of the following:

	2019	2018
Current:		
Federal	$ (46)	$ (2)
State	-	20
Total current	(46)	18
Deferred:		
Federal	11	-
State	7	-
Total deferred	18	-
Benefit from income taxes	$ (28)	$ 18

The Company performs an analysis each year to determine whether the expected future income will more likely than not be sufficient to realize the deferred tax assets. The Company's recent operating results and projections of future income weighed heavily in the Company's overall assessment. As a result of this analysis, the Company continues to maintain a full valuation allowance against its federal and state net deferred tax assets at December 31, 2019 as the Company believes that it is more likely than not that these assets will not be realized. In the current year, the company maintains a full valuation allowance in consolidation and no separate company deferred tax liability recorded will be recorded.

The tax effects of significant items comprising the Company's deferred tax assets and (liabilities) as of December 31, 2019 and 2018 are as follows:

	2019	2018
Deferred tax assets:		
Federal net operating loss carryforwards	$ 44,153	$ 40,158
State net operating loss carryforwards	5,686	4,541
Compensation	1,399	1,100
Allowances and reserves	457	1,007
State taxes	848	794
Credit carryforward	229	233
163(j) interest	141	-
Leases	23	-
Deferred revenue	88	89
Property, plant and equipment	-	16
	53,024	47,938
Deferred tax liability:		
Intangible assets	(3,054)	(4,371)
Property, plant and equipment	(263)	-
Valuation allowance	(49,725)	(43,567)
Deferred tax liability-net valuation allowance	$ (18)	$ -

The Company's deferred tax asset and deferred tax liabilities are included within *Other long-term liabilities*, respectively, within the consolidated balance sheet as of December 31, 2019. Federal tax attribute carryforwards at December 31, 2019, consist primarily of approximately $210.1 million of federal net operating losses. In addition, the Company has approximately $92.2 million of state net operating losses carryforwards. The utilization of the federal carryforwards as an available offset to future taxable income is subject to limitations under federal income tax laws. Under current federal income tax law, federal NOLs incurred in tax years beginning after December 31, 2017 may be carried forward indefinitely, but the deductibility of such federal NOLs is limited to 80% of Federal Taxable Income, and current state net operating losses not utilized begin to expire this year.

The NOL carry forwards are subject to review and possible adjustment by the Internal Revenue Service and state tax authorities. During December 2016 through December 2019, the Company issued approximately 3.7 million shares of common stock, and for its preferred share issuances, another 3.47 million shares on an as-converted basis. NOL, and tax credit carry forwards may become subject to an annual limitation in the event of certain cumulative changes in the ownership interest of significant stockholders over a three year period in excess of 50%, as defined under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, or the Code, as well as similar state tax provisions. This would limit the amount of NOLs that we can utilize annually to offset future taxable income or tax liabilities. The amount of the annual limitation, if any, will be determined based on the value of our company immediately prior to an ownership change. Subsequent ownership changes may further affect the limitation in future years. Additionally, U.S. tax laws limit the time during which these carry forwards may be applied against future taxes, therefore, we may not be able to take full advantage of these carry forwards for federal income tax purposes. We are currently evaluating the ownership history of our company to determine if there were any ownership changes as defined under Section 382(g) of the Code and the effects any ownership change may have had.

A reconciliation of the difference between the federal statutory tax rates and the Company's effective tax rate from continuing operations is as follows:

	2019	2018
Federal statutory rate	21.0%	21.0%
State income tax rate, net of Federal tax benefit	3.0%	2.9%
Meals and entertainment	(0.2)%	(0.3)%
Contingent consideration	0.0%	0.0%
Tax reform change	0.0%	0.0%
Valuation allowance	(23.8)%	(23.7)%
Other non-deductible	0.0%	(0.1)%
Naked credit	(0.1)%	0.0%
Discontinued operations allocation	0.2%	0.0%
Effective tax rate	0.1%	(0.2)%

The following table summarizes the change in uncertain tax benefit reserves for the two years ended December 31, 2019:

	Unrecognized Tax Benefits
Balance of unrecognized benefits as of January 1, 2018	$ 1,117
Reductions for tax positions of prior years	(323)
Balance as of December 31, 2018	$ 794
Additions for tax positions of prior years	54
Balance as of December 31, 2019	$ 848

As of December 31, 2019 and 2018, the total amount of gross unrecognized tax benefits was $0.8 million and $0.8 million, respectively. The total amount of unrecognized tax benefits that, if recognized, would affect the effective tax rate as of December 31, 2019 and 2018 was $0.8 million and $0.8 million, respectively.

The Company recognized interest and penalties of $0.3 million and $0.2 million, respectively, related to uncertain tax positions in income tax expense during each of the years ended December 31, 2019 and 2018. At December 31, 2019 and 2018, accrued interest and penalties, net were $3.3 million and $3.0 million, respectively, and included in the *Other long-term liabilities* in the consolidated balance sheets.

Management plans to commence filing tax clearance certificates in states and related tax jurisdictions in which un-recognized tax benefits attributable to its former operating entities are recorded as long-term liabilities on the accompanying balance sheet. This process can range from 6 to 18 months before the Company receives clearance as to balances, if any, it may owe to a particular state or tax jurisdiction. Upon receipt and acknowledgment from a state or tax jurisdiction, the Company will settle the remaining obligation or reverse the recorded amount owed during the period in which the tax clearance certificate is obtained.

The Company and its subsidiaries file a U.S. Federal consolidated income tax return and consolidated and separate income tax returns in numerous states and local tax jurisdictions. The following tax years remain subject to examination as of December 31, 2019:

Jurisdiction	Tax Years
Federal	2015 - 2019
State and Local	2014 - 2019

To the extent there was a failure to file a tax return in a previous year; the statute of limitation will not begin until the return is filed. There were no examinations in process by the Internal Revenue Service as of December 31, 2019. In 2014, the Company was selected for examination by the Internal Revenue Service for the tax periods ending December 31, 2012 and December 31, 2011 that concluded in 2016 with no adjustments.

The Tax Cuts and Jobs Act (the "TCJA") was enacted on December 22, 2017 and became effective for tax years beginning after December 31, 2017. The TCJA had significant changes to U.S. tax law, lowering U.S. corporate income tax rates, implementing a territorial tax system, imposing a one-time transition tax on deemed repatriated earnings of foreign subsidiaries and modified the taxation of other income and expense items.

The TCJA reduces the U.S. corporate income tax rate from 34% to 21%, effective January 1, 2018. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to reverse. As a result of the reduction in the U.S. corporate income tax rate from 34% to 21% under the TCJA, we revalued deferred tax assets, net as of December 31, 2017. The tax impact of revaluation of the deferred tax assets, net was $22,768,303, which was wholly offset by a corresponding reduction in our valuation allowance of $22,768,303 resulting in a no net impact to our income tax expense.

Due to the timing of the new tax law and the substantial changes it brings, the staff of the Securities and Exchange Commission (the "SEC") issued Staff Accounting Bulletin No. 118 ("SAB 118"), which provides registrants a measurement period to report the impact of the new US tax law. During the measurement period, provisional amounts for the effects of the law are recorded to the extent a reasonable estimate can be made. To the extent that all information necessary is not available, prepared or analyzed, companies may recognize provisional estimated amounts for a period of up to one year following enactment of the TCJA. The Company did not have any changes to provisional estimates.

18. Historical Basic and Diluted Net Loss per Share

A reconciliation of the number of shares used in the calculation of basic and diluted earnings per share for the years ended December 31, 2019 and 2018 is as follows (rounded to thousands):

	Years Ended December 31,	
	2019	2018
Basic weighted average number of common shares	3,746	2,815
Potential dilutive effect of stock-based awards	-	-
Diluted weighted average number of common shares	3,746	2,815

The Company's Preferred Stock, on an as converted basis, and the following outstanding stock-based awards and warrants were excluded from the computation of the effect of dilutive securities on loss per share for the following periods as they would have been anti-dilutive (rounded to thousands):

	Years Ended December 31,	
	2019	2018
Options	416	283
Stock-settled stock appreciation rights (SARs)	-	6
Restricted stock units (RSUs)	49	36
Warrants	1,420	1,354
	1,885	1,679

19. Line of Credit

On November 13, 2018 the Company, Interpace Diagnostics Corporation, and Interpace Diagnostics, LLC entered into a Loan and Security Agreement (the "SVB Loan Agreement") with Silicon Valley Bank ("SVB"), which provides for up to $4.0 million of debt financing consisting of a term loan of up to $850,000 and a revolving line of credit based on its outstanding accounts receivable (the "Revolving Line") of up to $3.75 million.

The amount that may be borrowed under the Revolving Line is the lower of (i) $3.75 million or (ii) 80% of the Company's eligible accounts receivable (as adjusted by SVB). Revolving Line outstanding amounts incur interest at a rate per annum equal to the Wall Street Journal Prime Rate plus 0.5%. The Company is also required to pay an unused Revolving Line facility fee monthly in arrears in an amount equal to 0.35% per annum of the average unused but available portion of the Revolving Line. The term loan portion of the SVB Loan Agreement has a maturity date of May 2, 2022, and the Revolving Line has a maturity date three years from the effective date, or November 13, 2021.

As of December 31, 2019, the Company had drawn $3.0 million of the available funds with the Revolving Line and had $750,000 of remaining availability as $250,000 of the Line of Credit is used to secure the issuance of a standby letter of credit by SVB. See also Note 21, Subsequent Events – Revolving line of credit. As of December 31, 2019, we were in violation of a financial covenant for which we received a waiver from SVB on March 19, 2020. Since February 29, 2020 we were in compliance with all covenants.

20. Supplemental Cash Flow Information

	For The Years Ended December 31,	
	2019	**2018**
Net cash used in operating activities of discontinued operations	$ (30)	$ (361)
Net cash provided by investing activities of discontinued operations	$ -	$ -

Supplemental Disclosure of Other Cash Flow Information
(in thousands)

Cash paid for taxes	$ 227	$ 324
Cash paid for interest	$ 170	$ -

Supplemental Disclosures of Non Cash Activities
(in thousands)

	Years Ended December 31,	
	2019	**2018**
Operating		
Adoption of ASC 606	$ -	$ 2,500
Prepaid stock grants issued to vendors	$ -	$ 497
Adoption of ASC 842 - right of use asset	$ 2,449	$ -
Adoption of ASC 842 - operating lease liability	$ 2,536	$ -
Financing		
Accrued financing costs	$ 342	$ -
Accrued preferred dividends	$ 429	$ -

21. Subsequent Events

Impact of COVID-19 pandemic

We have taken what we believe are all necessary precautions to safeguard our employees from the Coronavirus (COVID-19) pandemic. We are following CDC guidance and local restrictions. All employees who do not work in a lab are currently on a telecommunication work arrangement. Our employees in the lab are wearing what we believe is appropriate protective gear. If an employee tests positive, then we will take necessary and available precautions in the lab to reduce the potential spread of COVID-19, including decontamination and temporary lab closures. There can be no assurance that key employees will not become ill or that we will able to continue to operate our labs. We have furloughed a significant number of employees as a result of reductions in customer demand and we have closed our administrative offices. Our management, finance staff and sales personnel have generally been able to successfully work remotely. Our labs require in-person staffing and as of the date of this report, we have been able to successfully operate our labs though a combination of social distancing and protective equipment.

The extent to which the COVID-19 pandemic impacts our operations will depend on future developments, which are highly uncertain and cannot be predicted at this time, and include the duration, severity and scope of the outbreak and the actions taken to contain or treat the coronavirus outbreak. In particular, the continued spread of the coronavirus globally is adversely affecting global economies and financial markets resulting in an economic downturn which could materially and adversely impact our operations including, without limitation, the functioning of our laboratories, the availability of supplies including reagents, the progress and data collection of our pharma services, customer demand and travel and employee health and availability.

We believe that the COVID-19 pandemic will adversely impact our results of operations, cash flows and financial condition for the first and second quarters of fiscal 2020 and possibly beyond. Our fiscal 2020 first quarter revenue has been impacted by lower than expected clinical service volume throughout March 2020. We believe this has resulted from the temporary reduction in non-essential testing procedures in connection with the COVID-19 pandemic. While we experienced a substantial increase in clinical services revenue compared to the first quarter of 2019, our March 2020 test volume decreased substantially compared to our February 2020 volume. Our pharma services preliminary first quarter revenue increased throughout the first quarter and average daily accessions improved in March 2020 as compared to January and February 2020.

We continue to monitor the rapidly evolving situation and guidance from authorities, including federal, state and local public health authorities and may take additional actions based on their recommendations. In these dynamic circumstances, there may be developments outside our control requiring us to adjust our operating plan.

Currently volume of testing in our clinical services labs has slowed, as noted above, and we believe we have taken the necessary actions to support the lower volume. Our pharma services customers have indicated that there could be a slowdown in clinical trials but thus far volume has not suffered. All of our labs are currently operating and we believe we are appropriately staffed for the volume of work. At this time, we do not anticipate any lab closures beyond temporary work stoppages from time to time to clean and disinfect the labs. To date, we have not lost any of our customer base and we are not aware of any customers with potential bankruptcy or payment issues. Lab supplies including reagents have been secured to mitigate any potential supply chain issues for the foreseeable future and we are not observing any shortages due to supply chain issues. Our third party clinical services billing and collections company has taken steps to continue operations remotely. There have been indications that payer processing may slow down but so far there has been little or no material impact to our collections**.**

As of April 21, 2020 we have approximately $18.4 million of cash on hand which includes $3.4 million drawn on our credit facility, $2.1 million in advances received under the Centers for Medicare & Medicaid Services (CMS) accelerated and advance payment program, and $0.65 million in the form of a grant received from the Department of Health and Human Services, which is subject to certain conditions regarding its use, including developing coronavirus and serology tests. Also as of April 21, 2020, the Company has maximized its borrowing under its line of credit facility and therefore has no further availability on its credit facility; however, we are in the process of seeking to expand availability under the credit facility from $4.0 to $8.0 million on terms similar to existing terms, but there can be no assurance that such credit line extension will be granted or that it will be granted on commercially reasonable and acceptable terms. As of the date of this report, the Company believes it will be able to access additional financing though commercial bank loans and the sale of its securities, although there can no assurance that financing market conditions will not change or that such financing can be obtained. It is anticipated that if business conditions remain at these lower levels for clinical services customers and our pharma services customers similarly reduce their demand until the end of July and thereafter demand recovers to pre COVID-19 pandemic levels, then we believe we will have ample resources to continue to service our customers. However, should business conditions deteriorate further or last longer than anticipated, then our business may be materially and adversely affected.

The Company’s leadership team is monitoring the situation on a daily basis and is has developed contingency plans to potentially mitigate the anticipated adverse financial impact of the COVID-19 pandemic. These contingency plans include significant cost saving actions to offset any volume shortfall and additional action plans to react to further potential declines.

As of April 2020, we are in the process of launching a new product line of antibody testing for the COVID-19 virus. We are currently validating a serological test that detects antibodies specific to the virus. However, there is no guarantee that we will be successful or realize any revenue or benefit from these efforts.

ATM program

In January 2020, under the Agreement with the Agent, the Company sold 80,341 (as adjusted for the reverse stock split) shares of common stock for approximate net proceeds to the Company of $0.5 million.

Reverse stock split

On January 15, 2020, the Company effected a one-for-ten reverse split of its issued and outstanding shares of its common stock (the "Reverse Stock Split"). Every 10 shares of common stock issued and outstanding were automatically combined into one share of issued and outstanding common stock, without any change in the par value per share. Our common stock began trading on The Nasdaq Capital Market on a Reverse Stock Split-adjusted basis on January 15, 2020. There was no change in its ticker symbol as a result of the Reverse Stock Split.

Federal Stimulus Programs in Connection with Coronavirus Pandemic

During April 2020, the Company applied for various federal stimulus loans, grants and advances made available under Title 1 of the Coronavirus Aid, Relief, and Economic Security (CARES) Act, including an approximate $3.5 million loan request under the Small Business Administration (SBA) Paycheck Protection Program (PPP), an approximate $0.65 million grant from the Department of Health and Human Services (HSS), and approximately $2.1 million in advances under the Centers for Medicare & Medicaid Services (CMS) accelerated and advance payment program. Each of these loans, grants and advances require certain certifications by the Company and impose specific limitations on the use of the proceeds.

As of April 21, 2020, we received $2.1 million in advances under the CMS accelerated and advance payment program, as well as the $0.65 million HSS grant. The CMS advance will be offset against future Medicare billings of the Company, and the HSS grant is subject to certain conditions regarding its use, including developing coronavirus and serology tests. There is no guarantee that any other loans, grants or advances will be approved. As of April 21, 2020, the Company's PPP loan has not yet been approved, pending new legislation increasing the pool. The PPP provides for loans to qualifying businesses for amounts up to 2.5 times of the average monthly payroll expenses of the qualifying business. The PPP loans and accrued interest are forgivable after eight weeks as long as the borrower uses the loan proceeds for eligible purposes, including payroll, benefits, rent and utilities, and maintains its payroll levels. The amount of loan forgiveness will be reduced if the borrower terminates employees or reduces salaries during the eight-week period. The unforgiven portion of the PPP loan is payable over two years at an interest rate of 1%, with a deferral of payments for the first six months. If the Company is successful in obtaining a PPP loan, we intend to use the proceeds for purposes consistent with the PPP and expect to meet the conditions for forgiveness of the loan.

Securities Purchase and Exchange Agreement

On January 10, 2020, the Company entered into a Securities Purchase and Exchange Agreement (the '**Securities Purchase and Exchange Agreement**") with 1315 Capital II, L.P., a Delaware limited partnership ("**1315 Capital**"), and Ampersand 2018 Limited Partnership, a Delaware limited partnership ("**Ampersand**" and, together with 1315 Capital, the "**Investors**") pursuant to which the Company agreed to sell to the Investors at the Closing (as defined in the Securities Purchase and Exchange Agreement) an aggregate of $20.0 million in Series B convertible preferred stock of the Company, par value $0.01 per share (the "**Series B Preferred Stock**"), at an issuance price per share of $1,000. Pursuant to the Securities Purchase and Exchange Agreement, 1315 Capital agreed to purchase 19,000 shares of Series B Preferred Stock at an aggregate purchase price of $19.0 million and Ampersand agreed to purchase 1,000 shares of Series B Preferred Stock at an aggregate purchase price of $1.0 million.

In addition, the Company agreed to exchange $27.0 million of the Company's existing Series A convertible preferred stock, par value $0.01 per share, held by Ampersand (the "**Series A Preferred Stock**"), represented by 270 shares of Series A Preferred Stock with a stated value of $100,000 per share, which represents all of the Company's issued and outstanding Series A Preferred Stock, for 27,000 newly created shares of Series B Preferred Stock (such shares of Series B Preferred Stock, the "**Exchange Shares**" and such transaction, the "**Exchange**"). Following the Exchange, no shares of Series A Preferred Stock remained designated, authorized, issued or outstanding. The Series B Preferred Stock has a conversion price of sixty cents ($0.60) (as adjusted to $6.00 following effectuation of the Reverse Stock Split defined and described below and subject to further adjustment in the event of any stock dividend, stock split, combination, or other similar recapitalization affecting such shares) as compared to a conversion price of $0.80 on the Series A Preferred Stock (as adjusted to $8.00 following effectuation of the Reverse Stock Split and subject to further adjustment in the event of any stock dividend, stock split, combination, or other similar recapitalization affecting such shares), but did not include certain rights applicable to the Series A Preferred Stock, including a six-percent (6%) dividend, a conversion price adjustment for any failure by the Company to achieve a revenue target of $34.0 million in 2020 related to its diagnostics business or a weighted-average anti-dilution adjustment. Under the terms of the Securities Purchase and Exchange Agreement, Ampersand also agreed to waive all dividends and weighted-average anti-dilution adjustments accrued to date on the Series A Preferred Stock.

The Series B Preferred Stock was offered and sold pursuant to an exemption from registration under Section 4(a)(2) of the Securities Act and Rule 506 of Regulation D promulgated thereunder. The shares to be issued upon conversion of the Series B Preferred Stock have not been registered under the Securities Act and may not be offered or sold in the United States in the absence of an effective registration statement or exemption from the registration requirements.

In connection with the Company's application for the PPP loan, both Ampersand and 1315 Capital consented to, and agreed to vote (by proxy or otherwise) their Series B Preferred Stock in favor of any "Fundamental Action" taken by the Company as determined by the Company's Board of Directors. "Fundamental Actions" include the Company's ability to a) authorize, create or issue any debt securities for borrowed money or funded debt; b) merge with or acquire all or substantially all of the assets of one or more other companies or entities with a value in excess of $20 million; c) transfer, by sale, exclusive license or otherwise, material intellectual property rights of the Company or any of its direct or indirect subsidiaries, other than those accomplished in the ordinary course of business; d) declare or pay any cash dividend or make any cash distribution on any equity interests of the Company other than the Series B Shares; d) incur any additional individual debt, indebtedness for borrowed money or other additional liabilities; and e) change any accounting methods or practices of the Company, except for those changes required by GAAP or applicable regulatory agencies or authorities.

Revolving line of credit

Using the proceeds received from the additional financing described above, the Company repaid the $3 million balance on the line of credit in January 2020. As of April 21, 2020, we had $3.4 million outstanding on the Revolving Line.

Letter of Credit

On March 31, 2020, SVB issued an irrevocable standby letter of credit in the amount of $0.35 million held for security by our Rutherford, NJ landlord pursuant to the July 19, 2019 assignment of the lease. As of March 31, 2020, $0.6 million of our Line of Credit is used to secure the issuances of standby letters of credit by SVB.

Nasdaq notification

On October 15, 2019, the Company received notice from Nasdaq indicating that the Company had until April 13, 2020 to regain compliance with the minimum bid price requirement of Nasdaq. On January 30, 2020 the Company received notice from Nasdaq stating that the Company was now in compliance with the minimum bid price requirement and that the matter was now closed**.**

INTERPACE BIOSCIENCES, INC.
VALUATION AND QUALIFYING ACCOUNTS
YEARS ENDED DECEMBER 31, 2019 AND 2018
($ in thousands)

Description	Balance at Beginning of Period	Additions (Reductions) Charged to Operations	(1) Deductions Other	Balance at end of Period
2018				
Allowance for doubtful notes	$ 869	-	-	$ 869
Tax valuation allowance	$ 42,165	-	1,402	$ 43,567
2019				
Allowance for doubtful accounts	$ -	-	25	$ 25
Allowance for doubtful notes	$ 869	-	-	$ 869
Tax valuation allowance	$ 43,567	-	6,158	$ 49,725

(1) Includes payments and actual write offs, as well as changes in estimates in the reserves.

Exhibit 3.1

Certificate of Incorporation

of

Professional Detailing, Inc.

The undersigned, being a natural person, solely for the purpose of organizing a corporation under the provisions and subject to the requirements of the laws of the State of Delaware (particularly Chapter 1, Title 8 of the Delaware Code and the acts amendatory thereof and supplemental thereto, and known, identified and referred to as the "General Corporation Law of the State of Delaware"), hereby certifies that:

FIRST: The name of the corporation is Professional Detailing, Inc. (hereinafter called the "Corporation'').

SECOND: The address of the registered office of the Corporation in the State of Delaware is 9 East Loockerman Street, Dover, Delaware, Kent County, 19901. The name of the registered agent of the Corporation at such address is National Registered Agents, Inc. The Corporation's principle executive offices are located at 599 MacArthur Boulevard, Mahwah, New Jersey 07430.

THIRD: The purpose of the Corporation is to engage in any lawful act or activity for which corporations may be organized under the General Corporation Law of the State of Delaware.

FOURTH: The total number of shares of all classes of stock which this Corporation shall have authority to issue is 35,000,000 shares, consisting of (i) 30,000,000 shares of Common Stock, $.01 par value per share ("Common Stock"), and (ii) 5,000,000 shares of Preferred Stock, $.01 par value per share ("Preferred Stock").

The following is a statement of the designations and the powers, privileges and rights, and the qualifications, limitations or restrictions thereof in respect of each class of capital stock of this Corporation.

(a) Common Stock.

1. General. All shares of Common Stock are of one class. All authorized and outstanding shares of Common Stock are to be fully paid and non-assessable. The Common Stock has no preemptive, conversion or other subscription rights to subscribe for any shares of any class of stock of this Corporation whether now or hereafter authorized. The holders of Common Stock are entitled to one vote for each share held of record on all matters submitted to a vote of stockholders. The voting, dividend and liquidation rights of the holders of the Common Stock are subject to and qualified by the rights of the holders of the Preferred Stock of any series as may be designated by the Board of Directors upon any issuance of the Preferred Stock of any series.

2. No Pre-emptive Rights. No holder of any of the shares of the Common Stock of the Corporation, whether now or hereafter authorized and issued, shall be entitled as of right to purchase or subscribe for (1) any unissued stock of any class, or (2) any additional shares of any class to be issued by reason of any increase of the authorized capital stock of the Corporation of any class, or (3) bonds, certificates of indebtedness, debentures or other securities convertible into stock of the Corporation, or carrying any right to purchase stock of any class, but any such unissued stock or such additional authorized issue of any stock or of other securities convertible into stock, or carrying any right to purchase stock, may be issued and disposed of pursuant to resolution of the Board of Directors to such persons, firms, partnerships, corporations, associations or other entities and upon such terms as may be deemed advisable by the Board of Directors in the exercise of its discretion.

3. Voting. The holders of the Common Stock are entitled to one vote for each share held at all meetings of stockholders. There shall be no cumulative voting. The number of authorized shares of Common Stock may be increased or decreased (but not below the number of shares thereof then outstanding) by the affirmative vote of the holders of a majority of the stock of this Corporation entitled to vote, irrespective of the provisions of Section 242(b)(2) of the General Corporation Law of the State of Delaware.

4. Dividends. Dividends may be declared and paid on the Common Stock from funds lawfully available therefor as and when determined by the Board of Directors and subject to any preferential dividend rights of any then outstanding Preferred Stock.

5. Liquidation- Upon the dissolution or liquidation of this Corporation, whether voluntary or involuntary, holders of Common Stock will be entitled to receive all assets of this Corporation available for distribution to its stockholders, subject to any preferential rights of any then outstanding Preferred Stock.

(b) Preferred Stock.

1. General. The Board of Directors, in the exercise of its discretion, is authorized to issue the undesignated Preferred Stock in one or more series, to determine the powers, preferences and rights, and qualifications, limitations or restrictions, granted to or imposed upon any wholly unissued series of undesignated Preferred Stock, and to fix the number of shares constituting any series and the designation of such series, without any further vote or action by the stockholders

2. No Pre-emptive Rights. No holder of any of the shares of any series of Preferred Stock of the Corporation, whether now or hereafter authorized and issued, shall be entitled as of right to purchase or subscribe for (1) any unissued stock of any class, or (2) any additional shares of any class to be issued by reason of any increase of the authorized capital stock of the Corporation of any class, or (3) bonds, certificates of indebtedness, debentures or other securities convertible into stock of the Corporation, or carrying any right to purchase stock of any class, but any such unissued stock or such additional authorized issue of any stock or of other securities convertible into stock, or carrying any right to purchase stock, may be issued and disposed of pursuant to resolution of the Board of Directors to such persons, firms, partnerships, corporations, associations or other entities and upon such terms as may be deemed advisable by the Board of Directors in the exercise of its discretion.

FIFTH: The name and the mailing address of the incorporator are as follows:

Name	**Mailing Address**
Terence O'Brien	Morse, Zelnick, Rose & Lander, LLP 450 Park Avenue New York, New York 10022

SIXTH: The powers of the incorporator are to terminate upon the filing of the Certificate of Incorporation.

SEVENTH: (a) The management of the business and the conduct of the affairs of the Corporation shall be vested in its Board of Directors. The phrase "whole Board" and the phrase "total number of directors" shall be deemed to have the same meaning, to wit, the total number of directors which the Corporation would have if there were no vacancies. The original or other Bylaws of the Corporation may be adopted, amended or repealed by the initial directors. After the original or other Bylaws of the Corporation have been adopted, amended, or repealed, as the case may be, in accordance with the provisions of Section 109 of the General Corporation Law of the State of Delaware, and after the Corporation has received any payment for any of its stock, the power to adopt, amend, or repeal the Bylaws of the Corporation may be exercised by the Board of Directors of the Corporation.

(b) Until the consummation of an initial public offering (an "IPO") of the Common Stock under the Securities Act of 1933, as amended (the "Act"), the Corporation shall have one or more directors, the number of directors to be determined from time to time by vote of a majority of the directors then in office. Immediately upon the consummation of an IPO, the following provisions shall apply:

1. Number of Directors. The number of directors of the Corporation shall not be less than one. The exact number of directors within the limitations specified in the preceding sentence shall be fixed from time to time by, or in the manner provided in, the Corporation's Bylaws.

2. Classes of Directors. The Board of Directors shall be and is divided into three classes: Class I, Class II and Class III. No one class shall have more than one director more than any other class. If a fraction is contained in the quotient arrived at by dividing the designated number of directors by three, then if such fraction is one-third, the extra director shall be a member of Class II, and if such fraction is two-thirds, one of the extra directors shall be a member of Class II and one of the extra directors shall be a member of Class III, unless otherwise provided from time to time by resolution adopted by the Board of Directors. The persons who shall serve as the initial Class I, Class II and Class III directors upon consummation of the IPO may be designated by the Board of Directors prior to such IPO.

3. Election of Directors/Terms of Office. Election of directors need not be by written ballot except as and to the extent provided in the Bylaws of the Corporation. Except as otherwise provided herein, each director shall serve for a term ending on the date of the third annual meeting of the stockholders following the annual meeting at which such director was elected. A director shall hold office until the annual meeting for the year in which his term expires and until his successor shall be elected and shall qualify, subject, however, to prior death, resignation, retirement, disqualification or removal from office for cause. Each initial Class I director shall serve for a one year term; each initial Class II director shall serve for a two year term; and each initial Class III director shall serve for a three year term. Notwithstanding the foregoing, the term of each director shall be subject to the election and qualification of his successor and to his earlier death, resignation or removal.

4. Allocation of Directors among Classes in the Event of Increases or Decreases in the Number of Directors. In the event of any increase or decrease in the authorized number of directors, (i) each director then serving as such shall nevertheless continue as a director of the class of which he is a member and (ii) the newly created or eliminated directorships resulting from such increase or decrease shall be apportioned among the three classes of directors so as to ensure that no one class has more than one director more than any other class. To the extent possible, consistent with the foregoing rule, any newly created directorships shall be added to those classes whose terms of office are to expire at the latest dates following such allocation, and any newly eliminated directorships shall be subtracted from those classes whose terms of offices are to expire at the earliest dates following such allocation, unless otherwise provided from time to time by resolution adopted by the Board of Directors.

5. Preferred Stock Directors. Notwithstanding the foregoing, whenever the holders of any one or more classes or series of Preferred Stock issued by the Corporation shall have the right to vote separately by class or series to elect directors at an annual or special meeting of stockholders, the election, term of office, filling of vacancies and other features of such directorships shall be governed by the terms of this Certificate of Incorporation applicable thereto, and such directors so elected shall not be divided into classes provided by this Article Seventh, unless expressly provided by such terms.

6. Removal. Directors of the Corporation may be removed only for cause by the affirmative vote of the holders of at least two-thirds of the shares of capital stock of the Corporation issued and outstanding and entitled to vote generally in the election of directors.

7. Vacancies. Any vacancy in the Board of Directors, however occurring, including a vacancy resulting from an enlargement of the Board of Directors, shall be filled only by a vote of a majority of directors then in office, although less than a quorum, or by a sole remaining director. A director elected to fill a vacancy shall be elected to hold office until the next election of the class for which such director shall have been chosen, subject to the election and qualification of his successor and to his earlier death, resignation or removal.

8. Stockholder Nominations and Introductions of Business. Advance notice of stockholder nominations for election of directors and other business to be brought by stockholders before either an annual or special meeting of stockholders shall be given in the manner provided by the Bylaws of the Corporation.

9. Committees. Wherever the term "Board of Directors" is used in this Certificate of Incorporation, such term shall mean the Board of Directors of the Corporation; provided, however that to the extent any committee of directors of the Board of Directors exists, such committee may exercise any right or authority of the Board of Directors under this Certificate of Incorporation.

10. Amendments to Article. Notwithstanding any other provision of law, this Certificate of Incorporation or the Bylaws of the Corporation, each as amended, and notwithstanding the fact that a lesser percentage may be specified by law, the affirmative vote of the holders of at least seventy-five percent (75%) of the shares of capital stock of the Corporation issued and outstanding and entitled to vote generally in the election of directors shall be required to amend or repeal or to adopt any provision inconsistent with this Article SEVENTH.

EIGHTH: The Corporation is to have perpetual existence.

NINTH: Whenever a compromise or arrangement is proposed between this Corporation and its creditors or any class of them and/or between this Corporation and its stockholders or any class of them, any court of equitable jurisdiction within the State of Delaware may, on the application in a summary way of this Corporation or of any creditor or stockholder thereof or on the application of any receiver or receivers appointed for this Corporation under § 291 of Title 8 of the Delaware Code or on the application of trustees in dissolution or of any receiver or receivers appointed for this Corporation under § 279 of Title 8 of the Delaware Code order a meeting of the creditors or class of creditors, and/or of the stockholder or class of stockholders of this Corporation, as the case may be, to be summoned in such manner as the said court directs. If a majority in number representing three-fourths in value of the creditors or class of creditors, and/or of the stockholders or class of stockholders of this Corporation, as the case may be, agree to any compromise or arrangement and to any reorganization of this Corporation as consequence of such compromise or arrangement, the said compromise or arrangement and the said reorganization shall, if sanctioned by the court to which the said application has been made, be binding on all the creditors or class of creditors, and/or on all the stockholders or class of stockholders, of this Corporation, as the case may be, and also on this Corporation.

TENTH: Whenever the Corporation shall be authorized to issue only one class of stock each outstanding share shall entitle the holder thereof to notice of, and the right to vote at, any meeting of stockholders. Whenever the Corporation shall be authorized to issue more than one class of stock no outstanding share of any class of stock which is denied voting power under the provisions of the Certificate of Incorporation shall entitle the holder thereof to the right to vote at any meeting of stockholders except as the provisions of paragraph (c)(2) of Section 242 of the General Corporation Law of the State of Delaware shall otherwise require; provided, that no share of any such class which is otherwise denied voting power shall entitle the holder thereof to vote upon the increase or decrease in the number of authorized shares of said class.

ELEVENTH: A director of the Corporation shall not be personally liable to the Corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except for liability (i) for any breach of the director's duty of loyalty to the Corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) under Section 174 of the Delaware General Corporation Law, or (iv) for any transaction from which the director derived an improper personal benefit.

TWELFTH: (a) Right to Indemnification. Each person who was or is made a party or is threatened to be made a party to or is involved in any action, suit, claim or proceeding, whether civil, criminal, administrative or investigative (hereinafter a "proceeding"), by reason of the fact that he or she, or a person of whom he or she is the legal representative, is or was a director or officer, of the Corporation or is or was serving at the request of the Corporation as a director, officer, employee or agent of another corporation or of a partnership, joint venture, trust or other enterprise, including service with respect to employee benefit plans, whether the basis of such proceeding is alleged action in an official capacity as a director, officer, employee or agent or in any other capacity while serving as a director, officer, employee or agent, shall be indemnified and held harmless by the Corporation to the fullest extent authorized by the Delaware General Corporation Law, as the same exists or may hereafter be amended (but, in the case of any such amendment, only to the extent that such amendment permits the Corporation to provide broader indemnification rights than said law permitted the Corporation to provide prior to such amendment), against all expense, liability and loss (including attorneys' fees, judgments, fines, ERISA excise taxes or penalties and amounts paid or to be paid in settlement) reasonably incurred or suffered by such person in connection therewith and such indemnification shall continue as to a person who has ceased to be a director, officer, employee or agent and shall inure to the benefit of his or her heirs, executors and administrators: provided, however, that, except as provided in paragraph (b) hereof, the Corporation shall indemnify any such person seeking indemnification in connection with a proceeding (or part thereof) initiated by such person only if such proceeding (or part thereof) was authorized by the Board of Directors. The right to indemnification conferred in this Section shall be a contract right and shall include the right to be paid by the Corporation the expenses incurred in defending any such proceeding in advance of its final disposition: provided, however, that, if the Delaware General Corporation Law requires, the payment of such expenses incurred by a director or officer (in his or her capacity as a director or officer and not in any other capacity in which service was or is rendered by such person while a director or officer, including, without limitation, service to an employee benefit plan) in advance of the final disposition of a proceeding, shall be made only upon delivery to the Corporation of an undertaking, by or on behalf of such director or officer, to repay all amounts so advanced if it shall ultimately be determined that such director or officer is not entitled to be indemnified under this Section or otherwise. The Corporation may, by action of its Board of Directors, provide indemnification to employees and agents of the Corporation with the same scope and effect as the foregoing indemnification of directors and officers mentioned in this Article Twelfth. Notwithstanding the indemnification provisions throughout the Certificate of Incorporation, the Corporation, shall not be obligated, contractually or otherwise, to indemnify its directors and officers with respect to proceedings initiated or brought by any officer or director and not by way of defense, or, for any amounts paid in settlement of any proceeding against any officer or director, without the prior written consent of the Company.

(b) Right of Claimant to Bring Suit. If a claim under paragraph (a) of this Article is not paid in full by the Corporation within thirty days after a written claim has been received by the Corporation, the claimant may at any time thereafter bring suit against the Corporation to recover the unpaid amount of the claim and, if successful in whole or in part, the claimant shall be entitled to be paid also the expense of prosecuting such claim. It shall be a defense to any such action (other than an action brought to enforce a claim for expenses incurred in defending any proceeding in advance of its final disposition where the required undertaking, if any is required, has been tendered to the Corporation) that the claimant has not met the standards of conduct which make it permissible under the Delaware General Corporation Law for the Corporation to indemnify the claimant for the amount claimed, but the burden of proving such defense shall be on the Corporation. Neither the failure of the Corporation (including its Board of Directors, independent legal counsel, or its stockholders) to have made a determination prior to the commencement of such action that indemnification of the claimant is proper in the circumstances because he or she has met the applicable standard of conduct set forth in the Delaware General Corporation Law, nor an actual determination by the Corporation (including its Board of Directors, independent legal counsel, or its stockholders) that the claimant has not met such applicable standard or conduct, shall be a defense to the action or create a presumption that the claimant has not met the applicable standard of conduct.

(c) Non-Exclusivity of Rights. The right to indemnification and the payment of expenses incurred in defending a proceeding in advance of its final disposition conferred in this Article shall not be exclusive of any other right which any person may have or hereafter acquire under any statute, provision of the Certificate of Incorporation, Bylaws, agreement, vote of stockholders or disinterested directors or otherwise.

(d) Insurance. The Corporation may maintain insurance, at its expense, to protect itself and any director, officer, employee or agent of the Corporation or another corporation, partnership, joint venture, trust or other enterprise against any such expense, liability or loss, whether or not the Corporation would have the power to indemnify such person against such expense, liability or loss under the Delaware General Corporation Law.

THIRTEENTH: From time to time any of the provisions of this Certificate of Incorporation may be amended, altered or repealed, and other provisions authorized by the laws of the State of Delaware at the time in force may be added or inserted in the manner and at the time prescribed by said laws, and all rights at any time conferred upon the stockholders of the Corporation by this Certificate of Incorporation are granted subject to the provisions of this Article Thirteenth.

FOURTEENTH: Meetings of the stockholders may be held within or without the State of Delaware, as the Bylaws, amendments thereto, or amendments to this Certificate of Incorporation may provide. The books of the Corporation may be kept outside of the State of Delaware at such place or places as may be designated from time to time by the Board of Directors or by the Bylaws, and amendments thereto, or by the amendments to this Certificate of Incorporation.

FIFTEENTH: At any time during which a class of capital stock of this Corporation is registered under Section 12 of the Securities Exchange Act of 1934 or any similar successor statute, stockholders of this Corporation may not take any action by written consent in lieu of a meeting. Notwithstanding any other provisions of law, this Certificate of Incorporation or the Bylaws of this Corporation, and notwithstanding the fact that a lesser percentage may be specified by law, the affirmative vote of the holders of at least seventy-five percent (75%) of the shares of capital stock of this Corporation issued and outstanding and entitled to vote generally in the election of directors shall be required to amend or repeal, or to adopt any provision inconsistent with, this Article Fifteenth.

SIXTEENTH: Special meetings of stockholders may be called at any time by only the Chairman of the Board of Directors of the Corporation, the Chief Executive Officer (or if there is no Chief Executive Officer, the President) or the Board of Directors of the Corporation. Business transacted at any special meeting of stockholders shall be limited to matters relating to the purpose or purposes stated in the notice of meeting. Notwithstanding any other provision of law, the Certificate of Incorporation or the Bylaws of the Corporation, and notwithstanding the fact that a lesser percentage may be specified by law, the affirmative vote of the holders of at least seventy-five percent (75%) of the shares of capital stock of the Corporation issued and outstanding and entitled to vote generally in the election of directors shall be required to amend or repeal, or to adopt any provision inconsistent with this Article Sixteenth.

Dated: February 10, 1998

/s/ Terence O'Brien

Terence O'Brien, Incorporator

CERTIFICATE OF MERGER
OF
PROFESSIONAL DETAILING, INC.
[a New Jersey Corporation]

AND

PROFESSIONAL DETAILING, INC.
[a Delaware Corporation]

It is hereby certified that:

1. The constituent business corporations participating in the merger herein certified are:

(i) Professional Detailing, Inc., which is incorporated under the laws of the State of New Jersey ("PDI-NJ"); and

(ii) Professional Detailing, Inc., which is incorporated under the laws of the State of Delaware ("PDI-Del").

2. The Plan of Merger has been approved, adopted, certified, executed, and acknowledged by each of the aforesaid constituent corporations in accordance with the provisions of subsection (c) of Section 252 of the Delaware General Corporation Law, to wit, by PDI-NJ in accordance with the laws of the State of New Jersey and by PDI-Del in the same manner as is provided in Section 251 of the Delaware General Corporation Law.

3. The name of the surviving corporation in the merger herein certified is Professional Detailing, Inc., a Delaware corporation, which will continue its existence as said surviving corporation under its present name upon the effective date of said merger pursuant to the provisions of the Delaware General Corporation Law.

4. The Certificate of Incorporation of PDI-Del. as now in force and effect, shall continue to be the Certificate of Incorporation of said surviving corporation until amended and changed pursuant to the provisions of the Delaware General Corporation Law,

5. The executed Plan of Merger between the aforesaid constituent corporations is on file at the principal place of business of the aforesaid surviving corporation, the address of which is as follows:

599 MacArthur Boulevard
Mahwah, New Jersey 07430

6. A copy of the aforesaid Plan of Merger will be furnished by the aforesaid surviving corporation, on request, and without cost, to any stockholder of each of the aforesaid constituent corporations.

7. The authorized capital stock of PDI-NJ consists of 2,500 shares without par value.

8. The merger of PDI-NJ with and into PDI-Del shall be effective immediately upon the filing of this Certificate of Merger.

Executed on this 13th day of May, 1998

PROFESSIONAL DETAILING, INC.
A Delaware Corporation

By: */s/ Charles T. Saldarini*
President and Chief Executive Officer

CERTIFICATE OF AMENDMENT
OF CERTIFICATE OF INCORPORATION
OF
PROFESSIONAL DETAILING, INC.
(Pursuant to Section 242 of
the Delaware General Corporation Law)

Professional Detailing, Inc. (the "Corporation"), a corporation organized and existing under and by virtue of the Delaware General Corporation Law (the "DGCL") does hereby certifies that:

1. The name of the corporation is Professional Detailing, Inc.

2. The Board of Directors of the Corporation duly adopted resolutions setting forth two (2) proposed amendments (the "Amendments") to the Certificate of Incorporation of the Corporation (the "Certificate of Incorporation"), declaring the Amendments' advisability to its stockholders, and directing that the Amendments be considered at the year 2001 annual meeting of the stockholders of the Corporation. At the year 2001 annual meeting of stockholders of the Corporation, a majority of the stockholders approved the Amendments. The Amendments provide as follows:

(i) That Article First of the Certificate of Incorporation shall be amended to read in its entirety as follows:

"FIRST: The name of the corporation is PDI, Inc. (hereinafter called the "corporation")";

and

(ii) That the first paragraph of Article Fourth of the Certificate of Incorporation shall be amended to read in its entirety as follows:

"FOURTH: The total number of shares of all classes of stock which this corporation shall have authority to issue is 105,000,000, consisting of (i) 100,000,000 shares of common stock, $.01 par value per share ("Common Stock") and (ii) 5,000,000 shares of preferred stock, $.01 par value per share (the "Preferred Stock")."

3. The Amendments herein certified have been duly adopted in accordance with the provisions of Section 242 of the DGCL by the Board of Directors.

4. This Certificate of Amendment shall become effective as of 8:00 a.m., Eastern Standard Time, on October 1, 2001.

Executed on this 28th day of September, 2001.

Professional Detailing, Inc.

By: */s/ Bernard C. Boyle*
Bernard C. Boyle
Executive Vice President and Chief Financial Officer

CERTIFICATE OF OWNERSHIP AND MERGER
OF
LIFECYCLE VENTURES, INC.
(a Delaware corporation)

INTO

PDI, INC.
(a Delaware corporation)

PDI, Inc. (hereinafter referred to as the "Corporation"), a corporation organized and existing under and by virtue of the Delaware General Corporation Law, does hereby certify:

1. The Corporation is a business corporation of the State of Delaware.

2. The Corporation is the owner of all of the outstanding shares of the stock of LifeCycle Ventures, Inc. (hereinafter referred to as "LCV"), which is also a business corporation of the State of Delaware.

3. On December 21, 2001, the Board of Directors of the Corporation adopted the following resolutions to merge LCV into the Corporation:

RESOLVED: That LCV be merged into this Corporation, and that all of the estate, property, rights, privileges, powers and franchises of LCV be vested in and held and enjoyed by this Corporation as fully and entirely and without change or diminution as the same were before held and enjoyed by LCV in its name.

RESOLVED: That this Corporation shall assume all of the obligations of LCV.

RESOLVED: That this Corporation shall cause to be executed and filed and/or recorded the documents prescribed by the laws of the State of Delaware and by the laws of any other appropriate jurisdiction and will cause to be performed all necessary acts within the State of Delaware and within any other appropriate jurisdiction.

RESOLVED: That the merger of LCV into the Corporation shall be effective as of 11:59 p.m. December 31, 2001.

Executed on this 24th day of December, 2001.

PDI, INC.

By: */s/ Bernard C. Boyle*
Bernard C. Boyle, Executive Vice President, Secretary and Chief Financial Officer

CERTIFICATE OF AMENDMENT
TO THE CERTIFICATE OF INCORPORATION OF
PDI, INC.

PDI, Inc. (the "Corporation"), a corporation organized and existing under and by virtue of the General Corporation Law of the state of Delaware, does hereby certify that:

1. The name of the Corporation is PDI, Inc.

2. The Board of Directors of the Corporation duly adopted resolutions approving and setting forth this proposed amendment (the "Amendment") to the Certificate of Incorporation of the Corporation (the "Certificate of Incorporation"), declaring the Amendment's advisability to its stockholders, and directing that the Amendment be considered at the 2012 annual meeting of the stockholders of the Corporation. At the annual meeting of the stockholders of the Corporation held on June 5, 2012, holders of a majority of the outstanding shares of the Corporation's common stock, being the only outstanding class of the Corporation's capital stock entitled to vote, voted in favor of the adoption of the Amendment.

3. The Amendment provides as follows:

The first paragraph of **ARTICLE FOURTH** of the Corporation's Certificate of Incorporation is amended to read as follows:

FOURTH: The total number of shares of all classes of stock which this corporation shall have authority to issue is 45,000,000, consisting of (i) 40,000,000 shares of common stock, par value $.01 per share ("Common Stock"), and 5,000,000 shares of preferred stock, par value $.01 per share ("Preferred Stock").

4. The Amendment herein certified has been duly adopted by the Board of Directors and stockholders of the Corporation in accordance with the provisions of Section 242 of the General Corporation Law of the state of Delaware.

IN WITNESS WHEREOF, this Certificate of Amendment to the Certificate of Incorporation of PDI, Inc. has been executed as of this 5th day of June, 2012.

PDI, Inc.

By: */s/ Nancy Lurker*
Name: Nancy Lurker
Title: Chief Executive Officer

STATE OF DELAWARE
CERTIFICATE OF OWNERSHIP

SUBSIDIARY INTO PARENT
Section 253

CERTIFICATE OF OWNERSHIP
MERGING

TVG 1, INC.

INTO

PDI, Inc.

(Pursuant to Section 253 of the General Corporation Law of Delaware)

PDI, Inc., a corporation incorporated on the 10th day of February, 1998, pursuant to the provisions of the General Corporation Law of the State of Delaware;

DOES HEREBY CERTIFY that this corporation owns 90% of the capital stock of TVG 1, Inc., a corporation incorporated on the 19th day of September, 1986, A.D., pursuant to the provisions of the State of Delaware, and that this corporation, by a resolution of its Board of Directors duly adopted on the 24th day of December, 2014, A.D., determined to and did merge into itself said TVG 1, Inc., which resolution is in the following words to wit:

WHEREAS this corporation lawfully owns 90% of the outstanding stock of TVG 1, Inc., a corporation organized and exiting under the laws of the State of Delaware, and

WHEREAS this corporation desires to merge into itself the said TVG 1, Inc., and to be possessed of all the estate, property, rights, privileges and franchises of said corporation,

NOW, THEREFORE, BE IT RESOLVED, that this corporation merge into itself said TVG 1, Inc. and assumes all of its liabilities and obligations, and

FURTHER RESOLVED, that an authorized officer of this corporation be and he/she is hereby directed to make and execute a certificate of ownership setting forth a copy of the resolution to merge said TVG 1, Inc. and assume its liabilities and obligations, and the date of adoption thereof, and to file the same in the office of the Secretary of State of Delaware, and a certified copy thereof in the office of the Recorder of Deeds of Kent County; and

FURTHER RESOLVED, that the officers of this corporation be and they hereby are authorized and directed to do all acts and things whatsoever, whether within or without the State of Delaware; which may be in any way necessary or proper to effect said merger.

IN WITNESS WHEREOF, said parent corporation has caused its corporate seal to be affixed and this certificate to be signed by an authorized officer this 29th day of December, 2014 A.D.

By: */s/ Graham Miao*
Authorized Officer
Name: Graham Miao
Print or Type
Title: Chief Financial Officer & EVP

(Insert if applicable)

FURTHER RESOLVED, that _____ relinquishes its corporate name and assumes in place thereof the name _____.

CERTIFICATE OF AMENDMENT
TO THE CERTIFICATE OF INCORPORATION OF
PDI, INC.

PDI, Inc. (the "Corporation"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware, does hereby certify that:

1. The name of the Corporation is PDI, Inc.

2. The Board of Directors of the Corporation duly adopted resolutions approving and setting forth this proposed amendment (the "Amendment") to the Certificate of Incorporation of the Corporation, as amended (the "Certificate of Incorporation"), declaring the Amendment's advisability, and directing that the Amendment be considered at a special meeting of the stockholders of the Corporation. Thereafter a special meeting of the stockholders of the Corporation was held, at which holders of a majority of the outstanding shares of the Corporation's common stock, being the only outstanding class of the Corporation's capital stock entitled to vote, voted in favor of the adoption of the Amendment.

3. The Amendment provides as follows:

That the first paragraph of ARTICLE FOURTH of the Corporation's Certificate of Incorporation is amended to read in its entirety as follows:

FOURTH: The total number of shares of all classes of stock which this corporation shall have authority to issue is 105,000,000, consisting of (i) 100,000,000 shares of common stock, par value $.01 per share ("Common Stock"), and (ii) 5,000,000 shares of preferred stock, par value $.01 per share ("Preferred Stock").

4. The Amendment herein certified has been duly adopted by the Board of Directors and stockholders of the Corporation in accordance with the provisions of Section 242 of the General Corporation Law of the State of Delaware.

IN WITNESS WHEREOF, this Certificate of Amendment to the Certificate of Incorporation of PDI, Inc. has been executed as of this 22nd day of December.

PDI, Inc.

By: */s/ Nancy Lurker*
Name: Nancy Lurker
Title: Chief Executive Officer

Signature Page to Charter Amendment re: Authorized Shares

CERTIFICATE OF AMENDMENT
TO THE CERTIFICATE OF INCORPORATION OF
PDI, INC.

PDI, Inc. (the "Corporation"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware, does hereby certify that:

1. The name of the Corporation is PDI, Inc.

2. The Board of Directors of the Corporation duly adopted resolutions approving and setting forth this proposed amendment (the "Amendment") to the Certificate of Incorporation of the Corporation, as amended (the "Certificate of Incorporation"), declaring the Amendment's advisability, and directing that the Amendment be considered at a special meeting of the stockholders of the Corporation. Thereafter a special meeting of the stockholders of the Corporation was held, at which holders of a majority of the outstanding shares of the Corporation's common stock, being the only outstanding class of the Corporation's capital stock entitled to vote, voted in favor of the adoption of the Amendment.

3. The Amendment provides as follows:

That ARTICLE FIRST of the Corporation's Certificate of Incorporation is amended to read in its entirety as follows:

FIRST: The name of the corporation is Interpace Diagnostics Group, Inc. (hereinafter called the "Corporation").

4. The Amendment herein certified has been duly adopted by the Board of Directors and stockholders of the Corporation in accordance with the provisions of Section 242 of the General Corporation Law of the State of Delaware.

IN WITNESS WHEREOF, this Certificate of Amendment to the Certificate of Incorporation of PDI, Inc. has been executed as of this 22nd day of December, 2015.

PDI, Inc.

By: */s/ Nancy Lurker*
Name: Nancy Lurker
Title: Chief Executive Officer

Signature Page to Charter Amendment re: Name Change

CERTIFICATE OF AMENDMENT
TO THE
CERTIFICATE OF INCORPORATION
OF
INTERPACE DIAGNOSTICS GROUP, INC.

INTERPACE DIAGNOSTICS GROUP, INC., a corporation organized and existing under the General Corporation Law of the State of Delaware (the "Corporation"), does hereby certify as follows:

FIRST: At the Effective Time, as defined below, of this Certificate of Amendment pursuant to Section 242 of the General Corporation Law of the State of Delaware, each ten (10) shares of the Corporation's common stock, par value $.01 per share, issued and outstanding immediately prior to the Effective Time (the "Old Common Stock") shall automatically without further action on the part of the Corporation or any holder of Old Common Stock, be reclassified, combined, converted and changed into one (1) fully paid and nonassessable share of common stock, par value $.01 per share (the "New Common Stock"), subject to the treatment of fractional share interests as described below (the "reverse stock split"). The conversion of the Old Common Stock into New Common Stock will be deemed to occur at the Effective Time. From and after the Effective Time, certificates representing the Old Common Stock shall represent the number of shares of New Common Stock into which such Old Common Stock shall have been converted pursuant to this Certificate of Amendment. Holders who otherwise would be entitled to receive fractional share interests of New Common Stock upon the effectiveness of the reverse stock split shall be entitled to receive a cash payment in lieu of any fractional share created as a result of such reverse stock split equal to (i) the average closing price of the Old Common Stock as reported by The NASDAQ Capital Market for the five trading days immediately preceding the effective date of the reverse stock split by (ii) the amount of the fractional share.

SECOND: The foregoing amendment shall be effective at 5:00 p.m. (EST) on December 28, 2016 (the "Effective Time").

THIRD: That the stockholders of the Corporation have duly approved the foregoing amendment in accordance with the provisions of Section 242 of the General Corporation Law of the State of Delaware.

IN WITNESS WHEREOF, the Corporation has caused this Certificate of Amendment to be duly adopted and executed in its corporate name and on its behalf by its duly authorized officer as of the 28th day of December, 2016.

INTERPACE DIAGNOSTICS GROUP, INC.

By: */s/ Jack E. Stover*
Name: Jack E. Stover
Title: President & CEO

STATE OF DELAWARE

CERTIFICATE OF CHANGE OF REGISTERED AGENT

AND/OR REGISTERED OFFICE

The corporation, organized and existing under the General Corporation Law of the State of Delaware, hereby certifies as follows:

4. The name of the corporation is INTERPACE DIAGNOSTICS GROUP, INC.

5. The Registered Office of the corporation in the State of Delaware is changed to 251 Little Falls Drive, in the City of Wilmington, DE, County of New Castle, Zip Code 19808. The name of the Registered Agent at such address upon whom process against this Corporation may be served is Corporation Service Company.

6. The foregoing change to the registered office/agent was adopted by a resolution of the Board of Directors of the corporation.

By: */s/ James E. Early*
Authorized Officer

Name James E. Early
Print or Type

INTERPACE DIAGNOSTICS GROUP, INC.

CERTIFICATE OF DESIGNATION OF PREFERENCES, RIGHTS AND LIMITATIONS

OF

SERIES A CONVERTIBLE PREFERRED STOCK

AND

SERIES A-1 CONVERTIBLE PREFERRED STOCK

PURSUANT TO SECTION 151 OF THE

DELAWARE GENERAL CORPORATION LAW

INTERPACE DIAGNOSTICS GROUP, INC., a Delaware corporation (the "**Corporation**"), in accordance with the provisions of Section 103 of the Delaware General Corporation Law (the "**DGCL**") does hereby certify that, in accordance with Section 151 of the DGCL, the following resolution was duly adopted by the Board of Directors of the Corporation on July 12, 2019:

RESOLVED, pursuant to authority expressly set forth in the Certificate of Incorporation of the Corporation (the "**Certificate of Incorporation**"), the issuance of a series of Preferred Stock designated as the Series A Convertible Preferred Stock, par value $0.01 per share, of the Corporation and the issuance of a series of Preferred Stock designated as the Series A-1 Convertible Preferred Stock, par value $0.01 per share, of the Corporation is each hereby authorized and the designation, number of shares, powers, preferences, rights, qualifications, limitations and restrictions thereof (in addition to any provisions set forth in the Certificate of Incorporation that are applicable to the Preferred Stock of all classes and series) are hereby fixed, and this Certificate of Designation of Preferences, Rights and Limitations of Series A Convertible Preferred Stock and Series A-1 Convertible Preferred Stock is hereby approved as follows:

SERIES A AND SERIES A-1 CONVERTIBLE PREFERRED STOCK

Section 1. Definitions. For the purposes hereof, the following terms shall have the following meanings:

"**Additional Shares of Common Stock**" shall mean all shares of Common Stock issued (or, pursuant to Section 9(e) below, deemed to be issued) by the Corporation after the Issuance Date, other than: (a) shares of Common Stock, Options or Convertible Securities issued as a dividend or distribution on Senior Preferred Stock; (b) shares of Common Stock, Options or Convertible Securities issued by reason of a dividend, stock split, split-up or other distribution on shares of Common Stock that is covered by Section 9(a), Section 9(b) or Section 9(c); (c) shares of Common Stock or Options issued to employees or directors of, or consultants or advisors to, the Corporation or any of its subsidiaries pursuant to a plan, agreement or arrangement approved by the Board of Directors of the Corporation, including the approval of at least one Series A Director; (d) shares of Common Stock or Convertible Securities actually issued upon the exercise of Options or shares of Common Stock actually issued upon the conversion or exchange of Convertible Securities, in each case, provided such issuance is pursuant to the terms of an Option or Convertible Security that is issued and outstanding prior to the Issuance Date (clauses a – d collectively, "**Exempted Securities**").

"**Affiliate**" means, with respect to any Person, any other Person that, directly or indirectly through one or more intermediaries, controls, is controlled by or is under common control with such Person, as such terms are used in and construed under Rule 405 under the Securities Act. With respect to a Purchaser, any investment fund or managed account that is managed on a discretionary basis by the same investment manager as such Purchaser will be deemed to be an Affiliate of such Purchaser.

"**Business Day**" means any day except Saturday, Sunday, any day which shall be a federal legal holiday in the United States or any day on which banking institutions in the State of New York are authorized or required by law or other governmental action to close.

"**Commission**" means the U.S. Securities and Exchange Commission.

"**Common Stock**" means the Corporation's common stock, par value $0.01 per share.

"**Conversion Shares**" means, collectively, the shares of Common Stock issuable upon conversion of the shares of Series A Preferred Stock in accordance with the terms hereof.

"**Convertible Securities**" shall mean any evidences of indebtedness, shares or other securities directly or indirectly convertible into or exchangeable for Common Stock, but excluding Options.

"**Deemed Liquidation**" shall mean (a) a merger or consolidation in which (i) the Corporation is a constituent party or (ii) a subsidiary of the Corporation is a constituent party and the Corporation issues shares of its capital stock pursuant to such merger or consolidation, except any such merger or consolidation involving the Corporation or a subsidiary in which the shares of capital stock of the Corporation outstanding immediately prior to such merger or consolidation continue to represent, or are converted into or exchanged for shares of capital stock that represent, immediately following such merger or consolidation, at least a majority, by voting power, of the capital stock of (1) the surviving or resulting corporation; or (2) if the surviving or resulting corporation is a wholly owned subsidiary of another corporation immediately following such merger or consolidation, the parent corporation of such surviving or resulting corporation; or (b) the sale, lease, transfer, exclusive license or other disposition, in a single transaction or series of related transactions, by the Corporation or any subsidiary of the Corporation of all or substantially all the assets of the Corporation and its subsidiaries taken as a whole, or the sale or disposition (whether by merger, consolidation or otherwise) of one or more subsidiaries of the Corporation if substantially all of the assets of the Corporation and its subsidiaries taken as a whole are held by such subsidiary or subsidiaries, except where such sale, lease, transfer, exclusive license or other disposition is to a wholly owned subsidiary of the Corporation.

"**DGCL**" shall mean the Delaware General Corporation Law.

"**Exchange Act**" means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

"**Holder**" means any holder of Senior Preferred Stock.

"**Issuance Date**" means July 15, 2019.

"**Minimum Price**" means the lower of (a) the closing price of Common Stock (as reflected on Nasdaq.com) on the Trading Day immediately preceding the Issuance Date; or (b) the average closing price of the Common Stock (as reflected on Nasdaq.com) for the five Trading Days immediately preceding the Issuance Date.

"**Net Revenue**" means the consolidated net revenue recognized by the Corporation as set forth on the Corporation's audited consolidated statement of operations for the twelve month period ended December 31, 2020, as reported by the Corporation on Form 10-K as filed with the Commission, in each case, solely to the extent such consolidated net revenue arises from the Corporation's clinical testing business (which for the avoidance of doubt will exclude any products or services acquired or licensed by the Corporation or any of its direct or indirect subsidiaries from and after the Issuance Date, including pursuant to that certain Secured Creditor Asset Purchase Agreement, entered into by a subsidiary of the Corporation on the Issuance Date).

"**Option**" shall mean rights, options or warrants to subscribe for, purchase or otherwise acquire Common Stock or Convertible Securities.

"**Person**" means any individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

"**Preferred Stock**" means the Corporation's preferred stock, par value $0.01 per share.

"**Series A Adjustment Amount**" means an amount equal to the product, of: (a) three cents ($0.03); multiplied by (b) (the amount, if any, by which the Net Revenue is less than Thirty Four Million Dollars ($34,000,000)) divided by 1,000,000; provided, however, in no event will the Series A Adjustment Amount equal an amount greater than twenty one cents $0.21 per share (it being understood that the Series A Adjustment Amount shall be subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares).

"**Series A Conversion Price**" means an amount initially equal to eighty cents ($0.80) (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares) minus the Series A Adjustment Amount, subject to adjustment as provided herein.

"**Series A Conversion Ratio**" means, for each share of Series A Preferred Stock, the ratio obtained by dividing the Series A Liquidation Amount of such share by the Series A Conversion Price.

"Series A Liquidation Value" means an amount equal to the Series A Liquidation Amount divided by the number of shares of Series A Preferred Stock outstanding.

"Series A-1 Liquidation Value" means an amount equal to the Series A-1 Liquidation Amount divided by the number of shares of Series A-1 Preferred Stock outstanding.

"**Series A Mandatory Conversion Price**" means an amount equal to eighty cents ($0.80) minus the Series A Adjustment Amount.

"**Series A Minimum Voting Ratio** " means, for each share of Series A Preferred Stock, the ratio obtained by dividing the Stated Value by Eighty Cents ($0.80) (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares).

"**Stated Value**" means $100,000 per share.

"**Threshold Amount**" means 19.99% of the number of shares of Common Stock outstanding immediately prior to the issuance of Senior Preferred Stock on the Issuance Date.

"**Trading Day**" means a day on which the Common Stock is traded for any period on a principal securities exchange or if the Common Stock is not traded on a principal securities exchange, on a day that the Common Stock is traded on another securities market on which the Common Stock is then being traded.

Section 2. Designation, Amount and Par Value; Assignment.

(a) The first series of Preferred Stock designated by this Certificate of Designation shall be designated as the Corporation's Series A Convertible Preferred Stock (the "**Series A Preferred Stock**") and the number of shares so designated shall be 270. The second series of Preferred Stock designated by this Certificate of Designation shall be designated as the Corporation's Series A-1 Convertible Preferred Stock (the "**Series A-1 Preferred Stock**" and together with the Series A Preferred Stock, the "**Senior Preferred Stock**") and the number of shares so designated shall be 80. The Senior Preferred Stock shall have a par value of $0.01 per share.

(b) The Corporation shall register shares of the Senior Preferred Stock, upon records to be maintained by the Corporation for that purpose (the "**Senior Preferred Stock Register**"), in the name of the Holders thereof from time to time. The Corporation may deem and treat the registered Holder of shares of Senior Preferred Stock as the absolute owner thereof for the purpose of any conversion thereof and for all other purposes. Shares of Senior Preferred Stock may be issued solely in book-entry form or, if requested by any Holder, such Holder's shares may be issued in certificated form. The Corporation shall register the transfer of any shares of Senior Preferred Stock in the Senior Preferred Stock Register, upon surrender of the certificates (if applicable) evidencing such shares to be transferred, duly endorsed by the Holder thereof, to the Corporation at its address specified herein. Upon any such registration or transfer, a new certificate (or book-entry notation, if applicable) evidencing the shares of Senior Preferred Stock so transferred shall be issued to the transferee and a new certificate (or book-entry notation, if applicable) evidencing the remaining portion of the shares not so transferred, if any, shall be issued to the transferring Holder, in each case, within two (2) Business Days. The provisions of this Certificate of Designation are intended to be for the benefit of all Holders from time to time and shall be enforceable by any such Holder.

Section 3. Dividends.

(a) From and after the third (3rd) anniversary of the Issuance Date, each share of Series A-1 Preferred Stock shall accrue dividends at the rate per annum of twelve percent (12%) of the Stated Value plus the amount of previously declared or accrued, and not previously paid dividends (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares) (the "**Series A-1 Accruing Dividends**"). The Series A-1 Accruing Dividends shall accrue from day to day, whether or not declared, and shall be cumulative and be compounded quarterly; provided, however, that except as set forth in the following sentence of this Section 3(a) such Series A-1 Accruing Dividends shall be payable only when, as, and if declared by the Board of Directors and the Corporation shall be under no obligation to pay such Series A-1 Accruing Dividends. The Corporation shall not declare, pay or set aside any dividends on shares of any other class or series of capital stock of the Corporation (other than the Series A Accruing Dividend and dividends on shares of Common Stock payable in shares of Common Stock) unless the Holders of the Series A-1 Preferred Stock then outstanding shall first receive, or simultaneously receive, a dividend on each outstanding share of Series A-1 Preferred Stock in an amount at least equal to the sum of (i) the amount of the aggregate Series A-1 Accruing Dividends then accrued on such share of Series A-1 Preferred Stock and not previously paid, plus (ii) (A) in the case of a dividend on Common Stock or any class or series that is convertible into Common Stock, that dividend per share of Series A-1 Preferred Stock as would equal the product of (1) the dividend payable on each share of such class or series determined, if applicable, as if all shares of such class or series had been converted into Common Stock and (2) the number of shares of Common Stock issuable had such share of Series A-1 Preferred Stock been converted into Series A Preferred Stock pursuant to Section 7 immediately prior to such dividend and immediately thereafter and effective prior to the consummation of such dividend each such share of Series A Preferred Stock had been converted to Common Stock pursuant to Section 8 without regard to the Exchange Cap, in each case calculated on the record date for determination of holders entitled to receive such dividend or (B) in the case of a dividend on any class or series that is not convertible into Common Stock, at a rate per share of Series A-1 Preferred Stock determined by (1) dividing the amount of the dividend payable on each share of such class or series of capital stock by the original issuance price of such class or series of capital stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares) and (2) multiplying such fraction by an amount equal to the Stated Value; provided that, if the Corporation declares, pays or sets aside, on the same date, a dividend on shares of more than one class or series of capital stock of the Corporation, the dividend payable to the holders of Series A-1 Preferred Stock pursuant to this Section 3(a) shall be calculated based upon the dividend on the class or series of capital stock that would result in the highest Series A-1 Preferred Stock dividend. Notwithstanding anything to the contrary herein, the Corporation shall not declare, pay or set aside a dividend on Series A-1 Preferred Stock consisting of Common Stock prior to the Nasdaq Approval Date.

(b) From and after the initial issuance date of a share of Series A Preferred Stock, including the date of conversion of any shares of Series A-1 Preferred Stock into Series A Preferred Stock, each such share of Series A Preferred Stock shall accrue dividends at the rate per annum of six percent (6%) of the Stated Value plus the amount of previously declared or accrued, and not previously paid dividends (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares) (the "**Series A Accruing Dividends**"). The Series A Accruing Dividends shall accrue from day to day, whether or not declared, and shall be cumulative and be compounded quarterly; provided, however, that except as set forth in the following sentence of this Section 3(b) such Series A Accruing Dividends shall be payable only when, as, and if declared by the Board of Directors and the Corporation shall be under no obligation to pay such Series A Accruing Dividends. The Corporation shall not declare, pay or set aside any dividends on shares of any other class or series of capital stock of the Corporation (other than the Series A-1 Accruing Dividend and dividends on shares of Common Stock payable in shares of Common Stock) unless the Holders of the Series A Preferred Stock then outstanding shall first receive, or simultaneously receive, a dividend on each outstanding share of Series A Preferred Stock in an amount at least equal to the sum of (i) the amount of the aggregate Series A Accruing Dividends then accrued on such share of Series A Preferred Stock and not previously paid, plus (ii) (A) in the case of a dividend on Common Stock or any class or series that is convertible into Common Stock, that dividend per share of Series A Preferred Stock as would equal the product of (1) the dividend payable on each share of such class or series determined, if applicable, as if all shares of such class or series had been converted into Common Stock and (2) the number of shares of Common Stock issuable upon conversion of a share of Series A Preferred Stock pursuant to Section 8 without regard to the Exchange Cap, in each case calculated on the record date for determination of holders entitled to receive such dividend or (B) in the case of a dividend on any class or series that is not convertible into Common Stock, at a rate per share of Series A Preferred Stock determined by (1) dividing the amount of the dividend payable on each share of such class or series of capital stock by the original issuance price of such class or series of capital stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares) and (2) multiplying such fraction by an amount equal to the Stated Value; provided that, if the Corporation declares, pays or sets aside, on the same date, a dividend on shares of more than one class or series of capital stock of the Corporation, the dividend payable to the Holders of Series A Preferred Stock pursuant to this Section 3(b) shall be calculated based upon the dividend on the class or series of capital stock that would result in the highest Series A Preferred Stock dividend. Notwithstanding anything to the contrary herein, the Corporation shall not declare, pay or set aside a dividend on Series A Preferred Stock consisting of Common Stock prior to the Nasdaq Approval Date.

Section 4. Voting Rights.

(a) Non-Voting Series A-1 Preferred Stock. The Series A-1 Preferred Stock shall have no voting rights.

(b) General Series A Preferred Stock Voting Rights . From and after the Issuance Date until the earlier of: (i) the day following the Next Meeting Date (as defined below); and (ii) six (6) months following the Issuance Date (the "**Voting Date**"), the Series A Preferred Stock shall have no voting rights (the "**Voting Block**"); provided, however, that the Voting Block shall not apply to Section 4(c)(i), Section 4(c)(ii), Section 4(c)(iii), Section 4(c)(iv), Section 4(c)(vi), Section 4(d) or Section 4(e); provided, further, that from and after the day following the Next Meeting Date, the Voting Block shall not apply. On any matter presented to the stockholders of the Corporation for their action or consideration at any meeting of stockholders of the Corporation (or by written consent of stockholders in lieu of meeting), each Holder of outstanding shares of Series A Preferred Stock shall be entitled to cast the number of votes equal to the lesser of: (a) the number of whole shares of Common Stock into which the shares of Series A Preferred Stock held by such Holder are convertible as of the record date for determining stockholders entitled to vote on such matter; and (b) the number of whole shares of Common Stock equal to the number of shares of Series A Preferred Stock held by such Holder as of the record date for determining stockholders entitled to vote on such matter multiplied by the Series A Minimum Voting Ratio; provided, however, that at any meeting of stockholders of the Corporation (or by written consent of stockholders in lieu of meeting) pursuant to which the record date for determining the stockholders entitled to vote at such meeting (or by written consent) occurs prior to the Nasdaq Approval Date, each share of Series A Preferred Stock that exceeds the Exchange Cap shall have no voting rights (the "**Voting Cap**"); provided, further, that from and after the Nasdaq Approval Date, the Voting Cap shall not apply. Except as provided by law or by the other provisions of this Certificate of Designation, Holders of Series A Preferred Stock shall vote together with the holders of Common Stock as a single class and on an as-converted to Common Stock basis.

(c) Directors.

(i) After the Nasdaq Approval Date, for so long as at least 135 shares of Series A Preferred Stock remain outstanding that are not subject to the Voting Cap (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares) or if the Holders of Series A Preferred obtain an exemption to the Voting Cap from the Nasdaq Capital Market with respect to the right to appoint directors of the Corporation, the Holders of record of the shares of Series A Preferred Stock, exclusively and as a separate class, shall be entitled to elect three (3) directors of the Corporation.

(ii) After the Nasdaq Approval Date, for so long as at least 90 shares of Series A Preferred Stock remain outstanding that are not subject to the Voting Cap (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares) or if the Holders of Series A Preferred obtain an exemption to the Voting Cap from the Nasdaq Capital Market with respect to the right to appoint directors of the Corporation, the Holders of record of the shares of Series A Preferred Stock, exclusively and as a separate class, shall be entitled to elect two (2) directors of the Corporation.

(iii) For so long as at least 45 shares of Series A Preferred Stock remain outstanding that are not subject to the Voting Cap (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares), the Holders of record of the shares of Series A Preferred Stock, exclusively and as a separate class, shall be entitled to elect one (1) director of the Corporation (each director elected pursuant to this Section 4(c) shall hereinafter referred to as a "**Series A Director**").

(iv) If the Corporation is unable to redeem for cash in compliance with Section 6 all of the shares of Senior Preferred Stock subject to a Redemption Notice in compliance with applicable law, the Holders of record of the shares of Series A Preferred Stock, exclusively and as a separate class, shall be entitled to elect a majority of the directors of the Corporation then in-office.

(v) The holders of record of the shares of Common Stock and of any other class or series of voting stock (including the Series A Preferred Stock), exclusively and voting together as a single class, shall, subject to the rights of any additional series of Preferred Stock that may be established from time to time, be entitled to elect the balance of the total number of directors of the Corporation. At any meeting held for the purpose of electing a director, the presence in person or by proxy of the holders of a majority of the outstanding shares of the class or series entitled to elect such director shall constitute a quorum for the purpose of electing such director.

(vi) Any director elected pursuant to this Section 4(c) may be removed without cause by, and only by, the affirmative vote of the holders of the shares of the class or series of capital stock entitled to elect such director or directors, given either at a special meeting of such stockholders duly called for that purpose or pursuant to a written consent of stockholders. A vacancy in any directorship filled by the holders of any class or series shall be filled only by vote or written consent in lieu of a meeting of the holders of such class or series or by any remaining director or directors elected by the holders of such class or series pursuant to this Section 4(c).

(d) Protective Provisions. Notwithstanding anything in this Certificate of Designation to the contrary, for so long as any shares of the Senior Preferred Stock remain outstanding, the following actions may only be taken by the Corporation or any of its direct or indirect subsidiaries with the written consent of Holders representing a majority of the outstanding shares of Senior Preferred Stock (voting as a single class):

(i) amend, waive, alter or repeal the preferences, rights, privileges or powers of the Holders of the Senior Preferred Stock;

(ii) amend, alter or repeal any provision of this Certificate of Designation in a manner that is adverse to the Holders of Senior Preferred Stock;

(iii) authorize, create or issue any equity securities senior to or pari passu with either series of the Senior Preferred Stock; or

(iv) increase or decrease the number of directors constituting the Board.

(e) Additional Protective Provisions. Notwithstanding anything in this Certificate of Designation to the contrary, for so long as either: (i) at least 105 shares of Senior Preferred Stock remain outstanding (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares); or (ii) at least 28 shares of Series A-1 Preferred Stock remain outstanding (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares), the following actions may only be taken by the Corporation or any of its direct or indirect subsidiaries with the written consent with the consent of Holders representing a majority of the outstanding shares of Senior Preferred Stock (voting as a single class):

(A) (1) authorize, create or issue any debt securities for borrowed money or funded debt pursuant to which the Corporation or any of its direct or indirect subsidiaries issues shares, warrants or any other convertible security in the same transaction or a series of related transactions; or (2) authorize, create or issue any debt securities for borrowed money or funded debt pursuant to which the Corporation or any of its direct or indirect subsidiaries does not issue shares, warrants or any other convertible security in the same transaction or a series of related transactions exceeding $4.5 million initially (the "**Debt Threshold**"), excluding, however: (w) any capitalized and operating leases entered into by the Corporation or its direct or indirect subsidiaries in the ordinary course of business consistent with past practice; and (x) any debt incurred by the Corporation pursuant to the terms of the Corporation's existing term loan and credit facility with Silicon Valley Bank as it is proposed to be expanded on the Issuance Date on similar terms with Silicon Valley Bank or another comparable credit facility provider subsequent to the Issuance Date; provided, that if the aggregate consolidated revenue recognized by the Corporation and its direct or indirect subsidiaries (the "**Combined Revenue**") as reported by the Corporation on Form 10-K as filed with the Commission for any fiscal year ending after the Issuance Date exceeds $45 million dollars, the Debt Threshold for the following fiscal year shall increase to an amount equal to: (y) ten percent (10%); multiplied by (z) the Combined Revenue as reported by the Corporation on Form 10-K as filed with the Commission for the previous fiscal year;

(B) merge with or acquire all or substantially all of the assets of one or more other companies or entities with a value in excess of $20 million (the "**Acquisition Threshold**"); provided, that the Acquisition Threshold shall increase on a straight line basis to an amount up to $40 million, but in no event greater than $40 million, to the extent Combined Revenue for the then-most recently completed quarterly period as reported by the Corporation on Form 10-K as filed with the Commission or Form 10-Q as filed with the Commission, as applicable, falls between the Combined Revenue for the Corporation's fiscal quarter ended on September 30, 2019, and 100% greater than the Combined Revenue for the Corporation's fiscal quarter ended on September 30, 2019;

(C) materially change the nature of the business of the Corporation or any of its direct or indirect subsidiaries as it is proposed to be conducted as of the Issuance Date.;

(D) consummate any Liquidation (as defined below);

(E) transfer, by sale, exclusive license or otherwise, material intellectual property rights of the Corporation or any of its direct or indirect subsidiaries, other than licenses, transfers or sales of products accomplished in the ordinary course of business consistent with past practice;

(F) declare or pay any cash dividend or make any cash distribution on any equity interests of the Corporation other than the Senior Preferred Stock;

(G) repurchase or redeem any shares of capital stock of the Corporation, except for: (1) the redemption of the Senior Preferred Stock pursuant to Section 5(e) or Section 6; or (2) repurchases of Common Stock under agreements previously approved by the Board of Directors of the Corporation with employees, consultants, advisors or others who performed services for the Corporation or any direct or indirect subsidiary in connection with the cessation of such employment or service;

(H) incur any additional individual debt, indebtedness for borrowed money or other additional liabilities pursuant to which the Corporation or any of its direct or indirect subsidiaries issues shares, warrants or any other convertible security in the same transaction or a series of related transactions; or (b) incur any individual debt, indebtedness for borrowed money or other liabilities pursuant to which the Corporation or any of its direct or indirect subsidiaries does not issue shares, warrants or any other convertible security in the same transaction or a series of related transactions in excess of the Debt Threshold (in each case, excluding: (i) any capitalized and operating leases entered into by the Corporation or its direct or indirect subsidiaries in the ordinary course of business consistent with past practice; (ii) any debt incurred by the Corporation pursuant to the terms of the Corporation's existing term loan and credit facility with Silicon Valley Bank as it is proposed to be expanded on the Issuance Date on similar terms with Silicon Valley Bank or another comparable credit facility provider subsequent to the Issuance Date; and (iii) any purchase money financing in connection with the acquisition of equipment or otherwise); or

(I) change any accounting methods or practices of the Corporation or any of its direct or indirect subsidiaries, except for those changes required by GAAP or applicable regulatory agencies or authorities, including but not limited to the Securities and Exchange Commission and the Financial Accounting Standards Board, in each case, as consented to by the Corporation's independent auditors.

(f) Notwithstanding the foregoing, nothing in Section 4(e) shall restrict the Corporation's ability to adopt an at-the-market offering of its Common Stock or other public offering of Common Stock registered with the Commission on Form S-3 for up to $5 million worth of the Common Stock ("**Permitted Financings**"); provided, however, that Permitted Financings will not include any transaction or series of related transactions pursuant to which the Corporation issues warrants or any other convertible security without the written consent of Holders representing a majority of the outstanding shares of Senior Preferred Stock.

Section 5. Liquidation.

(a) In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation or Deemed Liquidation (a "**Liquidation**"), the Holders of shares of Series A-1 Preferred Stock then outstanding shall be entitled to be paid out of the assets of the Corporation available for distribution to its stockholders (on a pari passu basis with the holders of any class or series of Preferred Stock ranking on liquidation on a parity with the Series A-1 Preferred Stock), and before any payment shall be made to the Holders of Series A Preferred Stock, Common Stock or any other class or series of Preferred Stock ranking on liquidation junior to the Series A-1 Preferred Stock by reason of their ownership thereof, an amount per share of Series A-1 Preferred Stock equal to the greater of (based on the date of the related Liquidation): (a) from and after the Issuance Date until the second (2nd) anniversary of the Issuance Date, two times (2x) the Stated Value of such share of Series A-1 Preferred Stock; (b) after the second (2nd) anniversary of the Issuance Date until the third (3rd) anniversary of the Issuance Date, two and one-half times (2½x) the Stated Value of such share of Series A-1 Preferred Stock; or (c) from and after the third (3rd) anniversary of the Issuance Date three times (3x) the Stated Value of such share of Series A-1 Preferred Stock, plus any Series A-1 Accruing Dividends accrued but unpaid thereon, whether or not declared, together with any other dividends declared but unpaid thereon or (ii) such amount per share as would have been payable in respect of such share had such share been converted into Series A Preferred Stock pursuant to Section 7 immediately prior to such Liquidation and immediately thereafter and effective prior to the consummation of such Liquidation each such share of Series A Preferred Stock had been converted to Common Stock pursuant to Section 8 without regard to the Exchange Cap (the amount payable in respect of shares of Series A-1 Preferred Stock pursuant to this sentence is hereinafter referred to as the "**Series A-1 Liquidation Amount**"). If upon any such Liquidation, the assets of the Corporation available for distribution to its stockholders shall be insufficient to pay the Holders of shares of Series A-1 Preferred Stock and any series of Preferred Stock ranking on liquidation on a parity with the Series A-1 Preferred Stock the full amount to which they shall be entitled under this Section 5(a), the Holders of shares of Series A-1 Preferred Stock and any series of Preferred Stock ranking on liquidation on a parity with the Series A-1 Preferred Stock shall share ratably in any distribution of the assets available for distribution in proportion to the respective amounts which would otherwise be payable in respect of the shares of Series A-1 Preferred Stock held by them upon such distribution if all amounts payable on or with respect to such shares were paid in full.

(b) In the event of any Liquidation, the Holders of shares of Series A Preferred Stock then outstanding shall be entitled to be paid out of the assets of the Corporation available for distribution to its stockholders (on a pari passu basis with the holders of any class or series of Preferred Stock ranking on liquidation on a parity with the Series A Preferred Stock), and before any payment shall be made to the holders of Common Stock or any other class or series of Preferred Stock ranking on liquidation junior to the Series A Preferred Stock by reason of their ownership thereof, an amount per share of Series A Preferred Stock equal to the greater of (i) the Stated Value of such share of Series A Preferred Stock, plus any Series A Accruing Dividends accrued but unpaid thereon, whether or not declared, together with any other dividends declared but unpaid thereon, or (ii) such amount per share as would have been payable had each such share been converted into Common Stock pursuant to Section 8 immediately prior to such Liquidation without regard to the Exchange Cap, (the amount payable in respect of shares of Series A Preferred Stock pursuant to this sentence is hereinafter referred to as the "**Series A Liquidation Amount**"). If upon any such Liquidation, the assets of the Corporation available for distribution to its stockholders shall be insufficient to pay the Holders of shares of Series A Preferred Stock and any series of Preferred Stock ranking on liquidation on a parity with the Series A Preferred Stock the full amount to which they shall be entitled under this Section 5(b), the Holders of shares of Series A Preferred Stock and any series of Preferred Stock ranking on liquidation on a parity with the Series A Preferred Stock shall share ratably in any distribution of the assets available for distribution in proportion to the respective amounts which would otherwise be payable in respect of the shares held by them upon such distribution if all amounts payable on or with respect to such shares were paid in full.

(c) In the event of any Liquidation, after the payment of all preferential amounts required to be paid to the Holders of shares of Series A-1 Preferred Stock, Series A Preferred Stock and any other series of Preferred Stock ranking on liquidation senior to the Common Stock, the remaining assets of the Corporation available for distribution to its stockholders shall be distributed among the holders of shares of Common Stock, pro rata based on the number of shares held by each such holder.

(d) The Corporation shall not have the power to effect a Deemed Liquidation unless the definitive agreement regarding such transaction provides that the consideration payable to the stockholders of the Corporation shall be allocated among the holders of capital stock of the Corporation in accordance with Section 5 of this Certificate of Designation.

(e) If following a Deemed Liquidation the Corporation does not effect a dissolution of the Corporation under the General Corporation Law within sixty (60) days after such Deemed Liquidation, then (i) the Corporation shall send a written notice to each Holder of Senior Preferred Stock no later than the sixtieth (60th) day after the Deemed Liquidation advising such Holders of their right (and the requirements to be met to secure such right) pursuant to the terms of the following clause (ii) to require the redemption of such shares of Senior Preferred Stock, and (ii) if the Holders of a majority of the then outstanding shares of Senior Preferred Stock so request in a written instrument delivered to the Corporation not later than sixty (60) days after receipt of such notice, the Corporation shall use the consideration received by the Corporation for such Deemed Liquidation (net of any retained liabilities associated with the assets sold or technology licensed, as determined in good faith by the Board of Directors of the Corporation) (the "**Net Proceeds**"), to the extent legally available therefor, on the one hundred fiftieth (150th) day after such Deemed Liquidation, to redeem all outstanding shares of Senior Preferred Stock at a price per share equal to the Series A-1 Liquidation Value or Series A Liquidation Value, as applicable. Notwithstanding the foregoing, in the event of a redemption pursuant to the preceding sentence, if the Net Proceeds are not sufficient to redeem all outstanding shares of Senior Preferred Stock and of any other series of Preferred Stock ranking on redemption on parity with the Senior Preferred Stock that is required to then be redeemed, or if the Corporation does not have sufficient lawfully available funds to effect such redemption, the Corporation shall first redeem a pro rata portion of each Holder's shares of Series A Preferred Stock and any such other series of Preferred Stock ranking on redemption on a parity with the Series A Preferred Stock to the fullest extent of such Net Proceeds or such lawfully available funds, as the case may be, based on the respective amounts which would otherwise be payable in respect of the shares to be redeemed if the legally available funds were sufficient to redeem all such shares. If upon any such redemption, the assets of the Corporation lawfully available to effect such redemption shall be insufficient to pay the Holders of shares of Series A Preferred Stock and any series of Preferred Stock ranking on redemption on a parity with the Series A Preferred Stock, the full amount to which they shall be entitled under this Section 5(e), the Holders of shares of Series A Preferred Stock and any series of Preferred Stock ranking on redemption on a parity with the Series A Preferred Stock shall share ratably in any distribution of the assets lawfully available for such redemption in proportion to the respective amounts which would otherwise be payable in respect of the shares held by them upon such redemption if all amounts payable on or with respect to such shares were paid in full, and shall redeem the remaining shares to have been redeemed as soon as practicable after the Corporation has funds legally available therefor. Thereafter, the Corporation shall next redeem a pro rata portion of each Holder's shares of Series A-1 Preferred Stock and any such other series of Preferred Stock ranking on redemption on parity with the Series A-1 Preferred Stock to the fullest extent of such Net Proceeds or such lawfully available funds, as the case may be, based on the respective amounts which would otherwise be payable in respect of the shares to be redeemed if the legally available funds were sufficient to redeem all such shares. If upon any such redemption, the assets of the Corporation lawfully available to effect such redemption shall be insufficient to pay the Holders of shares of Series A-1 Preferred Stock and any series of Preferred Stock ranking on redemption on a parity with the Series A-1 Preferred Stock, the full amount to which they shall be entitled under this Section 5(e), the Holders of shares of Series A-1 Preferred Stock and any series of Preferred Stock ranking on redemption on a parity with the Series A-1 Preferred Stock shall share ratably in any distribution of the assets lawfully available for such redemption in proportion to the respective amounts which would otherwise be payable in respect of the shares held by them upon such redemption if all amounts payable on or with respect to such shares were paid in full, and shall redeem the remaining shares to have been redeemed as soon as practicable after the Corporation has funds legally available therefor. The provisions of Section 6(b) below shall apply, with such necessary changes in the details thereof as are necessitated by the context, to the redemption of the Senior Preferred Stock pursuant to this Section 5(e). Prior to the distribution or redemption provided for in this Section 5(e), the Corporation shall not expend or dissipate the consideration received for such Deemed Liquidation, except to discharge expenses incurred in connection with such Deemed Liquidation or in the ordinary course of business consistent with past practice.

(f) The amount deemed paid or distributed to the holders of capital stock of the Corporation upon any Liquidation Event shall be the cash or the value of the property, rights or securities paid or distributed to such holders by the Corporation or the acquiring person, firm or other entity; provided, that the value of any such non-cash property, rights or securities shall be determined in good faith by the Board of Directors of the Corporation.

Section 6. Redemption.

(a) If the Corporation shall have failed to obtain the Nasdaq Approval on, or prior to, the third (3rd) anniversary of the Issuance Date (the "**Triggering Event Date**"), each Holder shall have the right (the "**Redemption Right**") beginning on the date following the Triggering Event Date to require the Corporation to redeem all of the shares of Series A Preferred Stock, if any, then held by such Holder that are convertible into a number of shares of Common Stock that exceeds the Exchange Cap and all of the shares of Series A-1 Preferred Stock then held by such Holder by delivering written notice thereof to the Corporation (the "**Redemption Notice**") together with the applicable certificates, if any, representing such shares of Senior Preferred Stock which Redemption Notice shall indicate that Holder is electing to redeem such shares of Senior Preferred Stock. Each of the shares of Senior Preferred Stock subject to redemption by the Corporation pursuant to this Section 6(a) shall be redeemed by the Corporation at a price equal to the Series A-1 Liquidation Value or Series A Liquidation Value, as applicable. Payment of the Series A-1 Liquidation Value or Series A Liquidation Value, as applicable, required by this Section 6(a) shall be made in accordance with the provisions of Section 6(b). Notwithstanding anything to the contrary in this Section 6(a), until the Series A Liquidation Value for each share of Series A Preferred Stock subject to a Redemption Notice is paid in full, such shares of Series A Preferred Stock that have not been so redeemed under this Section 6(a) may be converted, in whole or in part, by Holder into Common Stock pursuant to Section 8; provided, that the Corporation shall not be obligated to pay Holder the Series A Liquidation Value in respect of any shares of Senior Preferred Stock subject to a Redemption Notice that are so converted into shares of Common Stock.

(b) If a Holder submits a Redemption Notice in accordance with Section 6(a), the Corporation shall pay such Holder an amount equal to the aggregate Series A-1 Liquidation Value or Series A Liquidation Value, as applicable, payable in respect of all Senior Preferred Stock held by such Holder to be redeemed pursuant to Section 6(a) by wire transfer of immediately available funds to the account(s) designated in the Redemption Notice as soon as reasonably practicable, but in no event later than sixty (60) days, following the date of such Redemption Notice. Upon payment of the aggregate Series A-1 Liquidation Value or Series A Liquidation Value, as applicable, in respect of any shares of Senior Preferred Stock subject to a Redemption Notice, such shares of Senior Preferred Stock will be automatically cancelled without any further action on the part of the Corporation, Holder or any other Person and such cancelled shares of Senior Preferred Stock shall no longer be issued and outstanding shares of capital stock of the Corporation. In the event that the Corporation does not pay to Holder any portion of the Series A-1 Liquidation Value or Series A Liquidation Value, as applicable, in respect of shares of Senior Preferred Stock subject to a Redemption Notice in full within the time period required for any reason (including, without limitation, to the extent such payment is prohibited pursuant to applicable law), at any time thereafter and until the Corporation pays such Series A-1 Liquidation Value or Series A Liquidation Value, as applicable, in full, such Holder shall have the option, in lieu of redemption, to require the Corporation to promptly return to such Holder all or any of the shares of Senior Preferred Stock subject to a Redemption Notice that were submitted for redemption and for which the applicable Series A-1 Liquidation Value or Series A Liquidation Value, as applicable, has not been paid. Upon the Corporation's receipt of such notice, (A) the Redemption Notice shall be null and void with respect to such shares of Senior Preferred Stock, and (B) the Corporation shall immediately return the applicable certificate, if any, or issue a new, to Holder (unless such shares of Senior Preferred Stock are held in book-entry form, in which case the Corporation shall deliver evidence to such Holder that a book-entry for such shares of Senior Preferred Stock then exists).

Section 7. Conversion of Series A-1 Preferred Stock into Series A Preferred Stock.

(a) Automatic Conversion of Series A-1 Preferred Stock into Series A Preferred Stock. If the Corporation obtains the Nasdaq Approval at any time prior to the eighteen (18) month anniversary of the Issuance Date, on the date that the Corporation obtains such Nasdaq Approval (the "**Nasdaq Approval Date**"), each share of Series A-1 Preferred Stock shall automatically be converted into one share of Series A Preferred Stock.

(b) No Conversion of Series A-1 Preferred Stock into Common Stock. Shares of Series A-1 Preferred Stock shall not be convertible into shares of Common Stock.

Section 8. Conversion of Series A Preferred Stock into Common Stock.

(a) Conversion of Series A Preferred Stock into Common Stock at Option of Holder. Subject to Section 8(c) below, each share of Series A Preferred Stock shall be convertible, at any time and from time to time from and after the Issuance Date, at the option of the Holder thereof, into a number of shares of Common Stock equal to the product of the Series A Conversion Ratio and the number of shares of Series A Preferred Stock to be converted. Holders shall effect conversions of Series A Preferred Stock into Common Stock by providing the Corporation with the form of conversion notice attached hereto as **Annex A** (a "**Notice of Conversion**"), duly completed and executed. Provided the Corporation's transfer agent is participating in the Depository Trust Corporation ("**DTC**") Fast Automated Securities Transfer program, the Notice of Conversion may specify, at the Holder's election, whether the applicable Conversion Shares shall be credited to the DTC participant account nominated by the Holder through DTC's Deposit Withdrawal Agent Commission system (a "**DWAC Delivery**"). The "**Optional Conversion Date**", or the date on which a conversion shall be deemed effective, shall be defined as the Trading Day after the Trading Date that the Notice of Conversion, completed and executed, is sent by facsimile or other electronic transmission to, and received during regular business hours by, the Corporation; provided that the original certificate(s) (if any) representing such shares of Series A Preferred Stock being converted, duly endorsed, and the accompanying Notice of Conversion, are received by the Corporation within two (2) Trading Days thereafter. In all other cases, the Optional Conversion Date shall be defined as the Trading Day after the Trading Date on which the original shares of Series A Preferred Stock being converted, duly endorsed, and the accompanying Notice of Conversion, are received by the Corporation.

(b) Mandatory Conversion of Series A Preferred Stock into Common Stock. If at any time after the Corporation shall have obtained the Nasdaq Approval, the Corporation consummates the sale of shares of Common Stock to the public in a firm-commitment underwritten public offering pursuant to an effective registration statement under the Securities Act of 1933, as amended, pursuant to which (A) the price per share of the Common Stock in such offering is at least the Series A Mandatory Conversion Price (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares) and such offering results in at least $25 million in proceeds, net of the underwriting discount and commissions, to the Corporation and the Common Stock continues to be listed for trading on the Nasdaq Capital Market or another Exchange such as NYSE (such offering, an "**Underwritten Offering**", and the date of the consummation of such Underwritten Offering is referred to herein as the "**Mandatory Conversion Date**" and together with each Optional Conversion Date, a "**Conversion Date**"), (i) all outstanding shares of Series A Preferred Stock shall automatically be converted into shares of Common Stock, at the then effective Series A Conversion Ratio and (ii) such shares may not be reissued by the Corporation. The provisions of Section 8(d) shall apply, with such necessary changes in the details thereof as are necessitated by the context, to the conversion of shares of Series A Preferred Stock into Common Stock pursuant to this Section 8(b). Notwithstanding the foregoing, an Underwritten Offering shall not include, and shares of Series A Preferred Stock will not automatically convert to shares of Common Stock upon the consummation of, any Underwritten Offering that includes the issuance of warrants to purchase capital stock of the Corporation or any other Convertible Security.

(c) Series A Conversion Limitation. Notwithstanding anything herein to the contrary, from and after the Issuance Date until the Voting Date, the Corporation shall not effect any conversion of the Series A Preferred (the "**Exchange Block**"); provided, however, that from and after the Voting Date, the Exchange Block shall not apply. From and after the Voting Date, the Corporation shall not effect any conversion of the Series A Preferred Stock into Common Stock, and a Holder shall not have the right to convert any portion of the Series A Preferred Stock into Common Stock, if the issuance of such shares of Common Stock would exceed the aggregate number of shares of Common Stock which the Corporation may issue upon conversion of the Series A Preferred Stock under applicable Nasdaq Marketplace rules (the number of shares of Common Stock which may be issued without violating such rules, the "**Exchange Cap**"), except that the Exchange Cap shall not apply in the event that the Corporation obtains the approval of its stockholders as required by applicable Nasdaq Marketplace rules for issuances of shares of Common Stock without regard to the Exchange Cap (the "**Nasdaq Approval**"). Within six (6) months following the Issuance Date, the Corporation shall call a meeting (the date that such meeting is completed, the "**Next Meeting Date**") of the Corporation's stockholders for the purpose of soliciting the Nasdaq Approval for the issuance of the full amount of shares of Common Stock issuable upon the conversion of the Series A Preferred Stock, including the Series A Preferred Stock issuable upon conversion of the Series A-1 Preferred Stock, authorized and designated under this Certificate of Designation without regard to the Exchange Cap.

(d) Mechanics of Conversion of Series A Preferred Stock into Common Stock.

(i) Delivery of Certificate or Electronic Issuance Upon Conversion. Not later than three (3) Trading Days after the applicable Conversion Date (the "**Share Delivery Date**"), the Corporation shall (a) deliver, or cause to be delivered, to the converting Holder or recipient of the Conversion Shares a physical certificate or certificates representing the number of Conversion Shares set forth in a Notice of Conversion being acquired upon the conversion of shares of Series A Preferred Stock, or (b) in the case of a DWAC Delivery (if so requested by the Holder), electronically transfer such Conversion Shares by crediting the DTC participant account nominated by the Holder through DTC's DWAC system. If in the case of any Notice of Conversion such certificate or certificates are not delivered to or as directed by or, in the case of a DWAC Delivery, such shares are not electronically delivered to or as directed by, the applicable Holder by the Share Delivery Date, the applicable Holder shall be entitled to elect to rescind such Conversion Notice by written notice to the Corporation at any time on or before its receipt of such certificate or certificates for Conversion Shares or electronic receipt of such shares, as applicable, in which event the Corporation shall promptly return to such Holder any original Series A Preferred Stock certificate delivered to the Corporation and such Holder shall promptly return to the Corporation any Common Stock certificates or otherwise direct the return of any shares of Common Stock delivered to the Holder through the DWAC system, representing the shares of Series A Preferred Stock unsuccessfully tendered for conversion to the Corporation.

(ii) Obligation Absolute. Subject to Section 8(c) hereof and subject to Holder's right to rescind a Conversion Notice pursuant to Section 8(d)(i) above, the Corporation's obligation to issue and deliver the Conversion Shares upon conversion of Series A Preferred Stock in accordance with the terms hereof are absolute and unconditional, irrespective of any action or inaction by a Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by such Holder or any other Person of any obligation to the Corporation or any violation or alleged violation of law by such Holder or any other Person, and irrespective of any other circumstance which might otherwise limit such obligation of the Corporation to such Holder in connection with the issuance of such Conversion Shares. Nothing herein shall limit a Holder's right to pursue actual damages for the Corporation's failure to deliver Conversion Shares within the period specified herein and such Holder shall have the right to pursue all remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief; provided that Holder shall not receive duplicate damages for the Corporation's failure to deliver Conversion Shares within the period specified herein. The exercise of any such rights shall not prohibit a Holder from seeking to enforce damages pursuant to any other Section hereof or under applicable law.

(iii) Compensation for Buy-In on Failure to Timely Deliver Certificates Upon Conversion. If the Corporation fails to deliver to a Holder (or its transferee) the applicable certificate or certificates or to effect a DWAC Delivery, as applicable, in each case that represent shares of Common Stock by the Share Delivery Date pursuant to Section 8(d)(i) (other than a failure caused by incorrect or incomplete information provided by Holder to the Corporation), and if after such Share Delivery Date such Holder is required to or otherwise purchases (in an open market transaction or otherwise), shares of Common Stock to deliver in satisfaction of a sale by such Holder of the Conversion Shares which such Holder was entitled to receive upon the conversion relating to such Share Delivery Date (a "**Buy-In**"), then the Corporation shall (A) pay in cash to such Holder (in addition to any other remedies available to or elected by such Holder) the amount by which (x) such Holder's total purchase price (including any brokerage commissions) for the shares of Common Stock so purchased exceeds (y) the product of (1) the aggregate number of shares of Common Stock that such Holder was entitled to receive from the conversion at issue multiplied by (2) the actual sale price at which the sell order giving rise to such purchase obligation was executed (including any brokerage commissions) and (B) at the option of such Holder, either reissue (if surrendered) the shares of Series A Preferred Stock equal to the number of shares of Series A Preferred Stock submitted for conversion or deliver to such Holder the number of shares of Common Stock that would have been issued if the Corporation had timely complied with its delivery requirements under Section 8(d)(i). For example, if a Holder purchases shares of Common Stock having a total purchase price of $11,000 to cover a Buy-In with respect to an attempted conversion of shares of Series A Preferred Stock with respect to which the actual sale price (including any brokerage commissions) giving rise to such purchase obligation was a total of $10,000 under clause (A) of the immediately preceding sentence, the Corporation shall be required to pay such Holder $1,000. The Holder shall provide the Corporation written notice, within three (3) Trading Days after the occurrence of a Buy-In, indicating the amounts payable to such Holder in respect of such Buy-In together with applicable confirmations and other evidence reasonably requested by the Corporation. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Corporation's failure to timely deliver certificates representing shares of Common Stock upon conversion of the shares of Series A Preferred Stock as required pursuant to the terms hereof; provided, however, that the Holder shall not be entitled to both (i) require the reissuance of the shares of Series A Preferred Stock submitted for conversion for which such conversion was not timely honored and (ii) receive the number of shares of Common Stock that would have been issued if the Corporation had timely complied with its delivery requirements under Section 8(d)(i).

(iv) Not later than two (2) Business Days after the Nasdaq Approval Date, the Corporation shall issue to each Holder the number of shares of Series A Preferred Stock being acquired upon the conversion of shares of Series A-1 Preferred Stock held by such Holder pursuant to Section 7(a) solely in book-entry form or, if requested by any Holder, such shares may be issued in certificated form.

(e) Reservation of Shares Issuable Upon Conversion. The Corporation covenants that it will, at all times reserve and keep available out of its authorized and unissued shares of Series A Preferred Stock for the sole purpose of issuance upon conversion of the Series A-1 Preferred Stock, free from preemptive rights or any other actual contingent purchase rights of Persons other than the Holders of the Series A-1 Preferred Stock, not less than such aggregate number of shares of the Series A Preferred Stock as shall be issuable upon the conversion of all outstanding shares of Series A-1 Preferred Stock. The Corporation covenants that all shares of Series A Preferred Stock that shall be so issuable shall, upon issue, be duly authorized, validly issued, fully paid, non-assessable and free and clear of all liens and other encumbrances. The Corporation covenants that it will, at all times reserve and keep available out of its authorized and unissued shares of Common Stock for the sole purpose of issuance upon conversion of the Series A Preferred Stock, including all shares of Series A Preferred Stock issuable upon conversion of shares of Series A-1 Preferred Stock, free from preemptive rights or any other actual contingent purchase rights of Persons other than the Holders of the Series A Preferred Stock, not less than such aggregate number of shares of the Common Stock as shall be issuable (taking into account the adjustments of Section 9) upon the conversion of all outstanding shares of Series A Preferred Stock, including all shares of Series A Preferred Stock issuable upon conversion of shares of Series A-1 Preferred Stock. The Corporation covenants that all shares of Common Stock that shall be so issuable shall, upon issue, be duly authorized, validly issued, fully paid, non-assessable and free and clear of all liens and other encumbrances.

(f) Fractional Shares No fractional shares or scrip representing fractional shares of Series A Preferred Stock shall be issued upon the conversion of the Series A-1 Preferred Stock. As to any fraction of a share of Series A Preferred Stock which a Holder would otherwise be entitled to receive upon such conversion, the Corporation shall pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Stated Value. No fractional shares or scrip representing fractional shares of Common Stock shall be issued upon the conversion of the Series A Preferred Stock. As to any fraction of a share of Common Stock which a Holder would otherwise be entitled to receive upon such conversion, the Corporation shall pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Series A Conversion Price.

(g) Transfer Taxes. The issuance of certificates (or book entry notations) for shares of Series A Preferred Stock upon conversion of the Series A-1 Preferred Stock and the issuance of certificates (or book entry notations) for shares of the Common Stock upon conversion of the Series A Preferred Stock, in each case, shall be made without charge to any Holder for any documentary stamp or similar taxes that may be payable in respect of the issue or delivery of such certificates (or such book entry notation), provided that the Corporation shall not be required to pay any tax that may be payable in respect of any transfer involved in the issuance and delivery of any such certificate (or such book entry notation) upon conversion in a name other than that of the registered Holder(s) of such shares of Series A-1 Preferred Stock or Series A Preferred Stock, as applicable, and the Corporation shall not be required to issue or deliver such certificates (or such book entry notation) unless or until the Person or Persons requesting the issuance thereof shall have paid to the Corporation the amount of such tax or shall have established to the satisfaction of the Corporation that such tax has been paid.

(h) Status as Stockholder. Upon each Conversion Date and Mandatory Conversion Date: (i) the shares of Series A Preferred Stock being converted shall be deemed converted into shares of Common Stock; and (ii) the Holder's rights as a holder of such converted shares of Series A Preferred Stock shall cease and terminate, excepting only the right to receive certificates (or book entry notations) for such shares of Common Stock and to any remedies provided herein or otherwise available at law or in equity to such Holder because of a failure by the Corporation to comply with the terms of this Certificate of Designation. In all cases, the Holder shall retain all of its rights and remedies for the Corporation's failure to convert Series A Preferred Stock. From and after the Nasdaq Approval Date: (i) the shares of Series A-1 Preferred Stock shall be deemed converted into shares of Series A Preferred Stock; and (ii) the Holder's rights as a Holder of such converted shares of Series A-1 Preferred Stock shall cease and terminate, excepting only the right to receive certificates (or book entry notations) for such shares of Series A Preferred Stock and to any remedies provided herein or otherwise available at law or in equity to such Holder because of a failure by the Corporation to comply with the terms of this Certificate of Designation. In all cases, the Holder shall retain all of its rights and remedies for the Corporation's failure to convert Series A-1 Preferred Stock.

Section 9. Certain Adjustments.

(a) Stock Dividends and Stock Splits. If the Corporation, at any time while any shares of Series A Preferred Stock are outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions payable in shares of Common Stock with respect to the then outstanding shares of Common Stock; (ii) subdivides outstanding shares of Common Stock into a larger number of shares; or (iii) combines (including by way of a reverse stock split) outstanding shares of Common Stock into a smaller number of shares, then the Series A Conversion Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding any treasury shares of the Corporation) outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event (excluding any treasury shares of the Corporation). Any adjustment made pursuant to this Section 9(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision or combination.

(b) Adjustments for Other Dividends and Distributions. In the event the Corporation at any time or from time to time after the Issuance Date shall make or issue, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable in securities of the Corporation (other than a distribution of shares of Common Stock in respect of outstanding shares of Common Stock) or in other property and the provisions of Section 3 do not apply to such dividend or distribution, then and in each such event the Holders of Senior Preferred Stock shall receive, simultaneously with the distribution to the holders of Common Stock, a dividend or other distribution of such securities or other property in an amount equal to the amount of such securities or other property as they would have received if all outstanding shares of Series A Preferred Stock, including if all shares of Series A-1 Preferred Stock shall have been converted to Series A Preferred Stock, had been converted into Common Stock on the date of such event.

(c) Adjustment for Merger or Reorganization, etc. Subject to the provisions of Section 5, if there shall occur any reorganization, recapitalization, reclassification, consolidation or merger involving the Corporation in which the Common Stock (but not the Series A Preferred Stock) is converted into or exchanged for securities, cash or other property (other than a transaction covered by Section 9(a), Section 9(b), Section 9(e) or Section 9(f)), then, following any such reorganization, recapitalization, reclassification, consolidation or merger, each share of Series A Preferred Stock shall thereafter be convertible in lieu of the Common Stock into which it was convertible prior to such event into the kind and amount of securities, cash or other property which a holder of the number of shares of Common Stock of the Corporation issuable upon conversion of one share of Series A Preferred Stock immediately prior to such reorganization, recapitalization, reclassification, consolidation or merger would have been entitled to receive pursuant to such transaction; and, in such case, appropriate adjustment (as determined in good faith by the Board of Directors of the Corporation) shall be made in the application of the provisions in this Certificate of Designation with respect to the rights and interests thereafter of the Holders of the Series A Preferred Stock, to the end that the provisions set forth in this Certificate of Designation (including provisions with respect to changes in and other adjustments of the Series A Conversion Price) shall thereafter be applicable, as nearly as reasonably may be, in relation to any securities or other property thereafter deliverable upon the conversion of the Series A Preferred Stock.

(d) No Adjustment of Series A Conversion Price . No adjustment in the Series A Conversion Price shall be made as the result of the issuance or deemed issuance of Additional Shares of Common Stock if the Corporation receives written notice from the Holders representing a majority of the Senior Preferred Stock (voting as a single class) then-outstanding agreeing that no such adjustment shall be made as the result of the issuance or deemed issuance of such Additional Shares of Common Stock.

(e) Deemed Issue of Additional Shares of Common Stock.

(i) If the Corporation at any time or from time to time after the Issuance Date shall issue any Options or Convertible Securities (excluding Options or Convertible Securities which are themselves Exempted Securities) or shall fix a record date for the determination of holders of any class of securities entitled to receive any such Options or Convertible Securities, then the maximum number of shares of Common Stock (as set forth in the instrument relating thereto, assuming the satisfaction of any conditions to exercisability, convertibility or exchangeability but without regard to any provision contained therein for a subsequent adjustment of such number) issuable upon the exercise of such Options or, in the case of Convertible Securities and Options therefor, the conversion or exchange of such Convertible Securities, shall be deemed to be Additional Shares of Common Stock issued as of the time of such issue or, in case such a record date shall have been fixed, as of the close of business on such record date.

(ii) If the terms of any Option or Convertible Security, the issuance of which resulted in an adjustment to the Series A Conversion Price pursuant to the terms of Section 9(f), are revised as a result of an amendment to such terms or any other adjustment pursuant to the provisions of such Option or Convertible Security (but excluding automatic adjustments to such terms pursuant to anti-dilution or similar provisions of such Option or Convertible Security pursuant to which an adjustment has already been made under this Section 9(e)) to provide for either (1) any increase or decrease in the number of shares of Common Stock issuable upon the exercise, conversion and/or exchange of any such Option or Convertible Security or (2) any increase or decrease in the consideration payable to the Corporation upon such exercise, conversion and/or exchange, then, effective upon such increase or decrease becoming effective, the Series A Conversion Price computed upon the original issue of such Option or Convertible Security (or upon the occurrence of a record date with respect thereto) shall be readjusted to such Series A Conversion Price as would have obtained had such revised terms been in effect upon the original date of issuance of such Option or Convertible Security. Notwithstanding the foregoing, no readjustment pursuant to this Section 9(e)(ii) shall have the effect of increasing the Series A Conversion Price to an amount which exceeds the lower of (i) the Series A Conversion Price in effect immediately prior to the original adjustment made as a result of the issuance of such Option or Convertible Security, or (ii) the Series A Conversion Price that would have resulted from any issuances of Additional Shares of Common Stock (other than deemed issuances of Additional Shares of Common Stock as a result of the issuance of such Option or Convertible Security) between the original adjustment date and such readjustment date.

(iii) If the terms of any Option or Convertible Security (excluding Options or Convertible Securities which are themselves Exempted Securities), the issuance of which did not result in an adjustment to the Series A Conversion Price pursuant to the terms of Section 9(f) (either because the consideration per share (determined pursuant to Section 9(g)) of the Additional Shares of Common Stock subject thereto was equal to or greater than the Series A Conversion Price then in effect, or because such Option or Convertible Security was issued before the Issuance Date), are revised after the Issuance Date as a result of an amendment to such terms or any other adjustment pursuant to the provisions of such Option or Convertible Security (but excluding automatic adjustments to such terms pursuant to anti-dilution or similar provisions of such Option or Convertible Security pursuant to which an adjustment has already been made under this Section 9(e)) to provide for either (1) any increase in the number of shares of Common Stock issuable upon the exercise, conversion or exchange of any such Option or Convertible Security or (2) any decrease in the consideration payable to the Corporation upon such exercise, conversion or exchange, then such Option or Convertible Security, as so amended or adjusted, and the Additional Shares of Common Stock subject thereto (determined in the manner provided in Section 9(e)(ii)) shall be deemed to have been issued effective upon such increase or decrease becoming effective.

(iv) Upon the expiration or termination of any unexercised Option or unconverted or unexchanged Convertible Security (or portion thereof) which resulted (either upon its original issuance or upon a revision of its terms) in an adjustment to the Series A Conversion Price pursuant to the terms of Section 9(f), the Series A Conversion Price shall be readjusted to such Series A Conversion Price as would have obtained had such Option or Convertible Security (or portion thereof) never been issued.

(v) If the number of shares of Common Stock issuable upon the exercise, conversion and/or exchange of any Option or Convertible Security, or the consideration payable to the Corporation upon such exercise, conversion and/or exchange, is calculable at the time such Option or Convertible Security is issued or amended but is subject to adjustment based upon subsequent events, any adjustment to the Series A Conversion Price provided for in this Section 9(e) shall be effected at the time of such issuance or amendment based on such number of shares or amount of consideration without regard to any provisions for subsequent adjustments (and any subsequent adjustments shall be treated as provided in clauses (ii) and (iii) of this Section 9(e)). If the number of shares of Common Stock issuable upon the exercise, conversion and/or exchange of any Option or Convertible Security, or the consideration payable to the Corporation upon such exercise, conversion and/or exchange, cannot be calculated at all at the time such Option or Convertible Security is issued or amended, any adjustment to the Series A Conversion Price that would result under the terms of this Section 9(e) at the time of such issuance or amendment shall instead be effected at the time such number of shares and/or amount of consideration is first calculable (even if subject to subsequent adjustments), assuming for purposes of calculating such adjustment to the Series A Conversion Price that such issuance or amendment took place at the time such calculation can first be made.

(f) Adjustment of Series A Conversion Price Upon Issuance of Additional Shares of Common Stock. In the event the Corporation shall at any time after the Issuance Date issue Additional Shares of Common Stock (including Additional Shares of Common Stock deemed to be issued pursuant to Section 9(e)), without consideration or for a consideration per share less than the Series A Conversion Price in effect immediately prior to such issuance or deemed issuance, then the Series A Conversion Price shall be reduced, concurrently with such issue, to a price (calculated to the nearest one-hundredth of a cent) determined in accordance with the following formula:

CP2 = CP1* (A + B) ÷ (A + C).

For purposes of the foregoing formula, the following definitions shall apply:

"**CP2**" shall mean the Series A Conversion Price in effect immediately after such issuance or deemed issuance of Additional Shares of Common Stock.

"**CP1**" shall mean the Series A Conversion Price in effect immediately prior to such issuance or deemed issuance of Additional Shares of Common Stock;

"**A**" shall mean the number of shares of Common Stock outstanding immediately prior to such issuance or deemed issuance of Additional Shares of Common Stock (treating for this purpose as outstanding all shares of Common Stock issuable upon exercise of Options outstanding immediately prior to such issuance or deemed issuance or upon conversion or exchange of Convertible Securities (including the Series A Preferred Stock into Common Stock, including the shares of Series A-1 Preferred Stock into Series A Preferred Stock) outstanding (assuming exercise of any outstanding Options therefor) immediately prior to such issue);

"**B**" shall mean the number of shares of Common Stock that would have been issued if such Additional Shares of Common Stock had been issued or deemed issued at a price per share equal to CP1 (determined by dividing the aggregate consideration received by the Corporation in respect of such issue by CP1); and

"**C**" shall mean the number of such Additional Shares of Common Stock issued in such transaction.

(g) Determination of Consideration. For purposes of this Certificate of Designation, the consideration received by the Corporation for the issuance or deemed issuance of any Additional Shares of Common Stock shall be computed as follows: (i) such consideration shall: (A) insofar as it consists of cash, be computed at the aggregate amount of cash received by the Corporation, excluding amounts paid or payable for accrued interest; (B) insofar as it consists of property other than cash, be computed at the fair market value thereof at the time of such issue, as determined in good faith by the Board of Directors of the Corporation; and (C) in the event Additional Shares of Common Stock are issued together with other shares or securities or other assets of the Corporation for consideration which covers both, be the proportion of such consideration so received, computed as provided in clauses (A) and (B) above, as determined in good faith by the Board of Directors of the Corporation.

(h) Options and Convertible Securities. The consideration per share received by the Corporation for Additional Shares of Common Stock deemed to have been issued pursuant to Section 9(e), relating to Options and Convertible Securities, shall be determined by dividing: (i) the total amount, if any, received or receivable by the Corporation as consideration for the issue of such Options or Convertible Securities, plus the minimum aggregate amount of additional consideration (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such consideration) payable to the Corporation upon the exercise of such Options or the conversion or exchange of such Convertible Securities, or in the case of Options for Convertible Securities, the exercise of such Options for Convertible Securities and the conversion or exchange of such Convertible Securities, by (ii) the maximum number of shares of Common Stock (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such number) issuable upon the exercise of such Options or the conversion or exchange of such Convertible Securities, or in the case of Options for Convertible Securities, the exercise of such Options for Convertible Securities and the conversion or exchange of such Convertible Securities.

(i) Multiple Closing Dates. In the event the Corporation shall issue on more than one date Additional Shares of Common Stock that are a part of one transaction or a series of related transactions and that would result in an adjustment to the Series A Conversion Price pursuant to the terms of Section 9(f), then, upon the final such issuance, the Series A Conversion Price shall be readjusted to give effect to all such issuances as if they occurred on the date of the first such issuance (and without giving effect to any additional adjustments as a result of any such subsequent issuances within such period).

(j) Calculations. All calculations under this Certificate of Designation shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 9, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding any treasury shares of the Corporation) issued and outstanding.

(k) Notice to the Holders.

(i) Adjustment to Series A Conversion Price. Whenever the Series A Conversion Price is adjusted pursuant to any provision of this Section 9, the Corporation shall promptly deliver to each Holder a notice setting forth the Series A Conversion Ratio after such adjustment and setting forth a brief statement of the facts requiring such adjustment.

(ii) Other Notices. If (A) the Corporation shall declare a dividend (or any other distribution in whatever form) on the Common Stock, (B) the Corporation shall declare a special nonrecurring cash dividend on or a redemption of the Common Stock, (C) the Corporation shall authorize the granting to all holders of the Common Stock of rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights, (D) the approval of any stockholders of the Corporation shall be required in connection with any reclassification of the Common Stock, any consolidation or merger to which the Corporation is a party, any Liquidation, or any compulsory share exchange whereby the Common Stock is converted into other securities, cash or property, or (E) consent of the Holders of Senior Preferred Stock is required pursuant to Section 4(d) or Section 4(e), then, in each case, the Corporation shall cause to be filed at each office or agency maintained for the purpose of conversion of the shares of Series A Preferred Stock, and shall cause to be delivered to each Holder at its last address as it shall appear upon the stock books of the Corporation, at least ten (10) calendar days prior to the applicable record or effective date hereinafter specified, a notice stating (x) the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of the Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined or (y) the date on which such reclassification, consolidation, merger, sale, transfer, Liquidation or share exchange is expected to become effective or close, and the date as of which it is expected that holders of the Common Stock of record shall be entitled to exchange their shares of the Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange, provided that the failure to deliver such notice or any defect therein or in the delivery thereof shall not affect the validity of the corporate action required to be specified in such notice.

Section 10. Miscellaneous.

(a) Lost or Mutilated Stock Certificates. If a Holder's certificate representing shares of Series A Preferred Stock or Series A-1 Preferred Stock, if applicable, shall be mutilated, lost, stolen or destroyed, the Corporation shall execute and deliver, if requested by the Holder, in exchange and substitution for and upon cancellation of a mutilated certificate, or in lieu of or in substitution for a lost, stolen or destroyed certificate, a new certificate for the shares of Series A Preferred Stock or Series A-1 Preferred Stock so mutilated, lost, stolen or destroyed, but only upon receipt of evidence of such loss, theft or destruction of such certificate, and of the ownership thereof, reasonably satisfactory to the Corporation and, in each case, customary and reasonable indemnity, if requested, without the requirement to post a bond. Applicants for a new certificate under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Corporation may prescribe, without the requirement to post a bond.

(b) Waiver. Any waiver by the Corporation or a Holder of a breach of any provision of this Certificate of Designation shall not operate as or be construed to be a waiver of any other breach of such provision or of any breach of any other provision of this Certificate of Designation or a waiver by any other Holders. The failure of the Corporation or a Holder to insist upon strict adherence to any term of this Certificate of Designation on one or more occasions shall not be considered a waiver or deprive that party (or any other Holder) of the right thereafter to insist upon strict adherence to that term or any other term of this Certificate of Designation. Any waiver by the Corporation or a Holder must be in writing. Notwithstanding any provision in this Certificate of Designation to the contrary, any provision contained herein and any right of the Holders of Senior Preferred Stock granted hereunder may be waived as to all shares of Senior Preferred Stock (and the Holders thereof) upon the written consent of the Holders of a majority of the shares of Senior Preferred Stock (voting as a single class) then outstanding, unless a higher percentage is required by the DGCL, in which case the written consent of the Holders of not less than such higher percentage shall be required.

(c) Severability. If any provision of this Certificate of Designation is invalid, illegal or unenforceable, the balance of this Certificate of Designation shall remain in effect, and if any provision is inapplicable to any Person or circumstance, it shall nevertheless remain applicable to all other Persons and circumstances. If it shall be found that any interest or other amount deemed interest due hereunder violates the applicable law governing usury, the applicable rate of interest due hereunder shall automatically be lowered to equal the maximum rate of interest permitted under applicable law.

(d) Next Business Day. Whenever any payment or other obligation hereunder shall be due on a day other than a Business Day, such payment shall be made on the next succeeding Business Day.

(e) Headings. The headings contained herein are for convenience only, do not constitute a part of this Certificate of Designation and shall not be deemed to limit or affect any of the provisions hereof.

(f) Status of Converted Senior Preferred Stock. If any shares of Senior Preferred Stock shall be converted or redeemed by the Corporation, such shares shall resume the status of authorized but unissued shares of preferred stock and shall no longer be designated as Series A Preferred Stock or Series A-1 Preferred Stock, as applicable.

****

IN WITNESS WHEREOF, Interpace Diagnostics Group, Inc., has caused this Certificate of Designation of Preferences, Rights and Limitations of Series A Convertible Preferred Stock and Series A-1 Convertible Preferred Stock to be executed by its duly authorized officer this 15th day of July, 2019.

INTERPACE DIAGNOSTICS GROUP, INC.

By: */s/ Jack E. Stover*
Name: Jack E. Stover
Title: President & Chief Executive Officer

[SIGNATURE PAGE TO CERTIFICATE OF DESIGNATION]

CERTIFICATE OF AMENDMENT
OF
CERTIFICATE OF INCORPORATION
OF
INTERPACE DIAGNOSTICS GROUP, INC.

Interpace Diagnostics Group, Inc. (the "Corporation''), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware ("DGCL"), does hereby certify:

FIRST: That the board of directors of the Corporation duly adopted resolutions declaring advisable the amendment of the Certificate of Incorporation of the Corporation. The resolutions setting forth the proposed amendment are as follows:

RESOLVED, that Article FIRST of the Corporation's Certificate of Incorporation be amended to read in its entirety as follows:

FIRST: The name of the Corporation is Interpace Biosciences, Inc. (hereinafter called the "Corporation").

SECOND: That the foregoing amendment was duly adopted in accordance with the provisions of § 242 of the DGCL.

IN WITNESS WHEREOF, Interpace Diagnostics Group, Inc. has caused this certificate to be signed by a duly authorized officer, this 12th day of November, 2019.

/s/ Jack E. Stover
Name: Jack E. Stover
Title: President & Chief Executive Officer

CERTIFICATE OF AMENDMENT
TO THE
CERTIFICATE OF INCORPORATION
OF
INTERPACE BIOSCIENCES, INC.

Interpace Biosciences, Inc. (the "**Corporation**"), a corporation organized and existing under the General Corporation Law of the State of Delaware, DOES HEREBY CERTIFY THAT:

FIRST: The Board of Directors of the Corporation (the "**Board of Directors**") has duly adopted resolutions proposing and declaring advisable the following amendment to the Certificate of Incorporation of the Corporation (the "**Certificate of Incorporation**"), directing that said amendment be submitted to the stockholders of the Corporation for consideration thereof, and authorizing the Corporation to execute and file with the Secretary of State of the State of Delaware this Certificate of Amendment of Certificate of Incorporation (this "**Certificate of Amendment**").

SECOND: At the Effective Time (as defined below), of this Certificate of Amendment pursuant to Section 242 of the General Corporation Law of the State of Delaware, each ten (10) shares of the Corporation's common stock, par value $0.01 per share, issued and outstanding immediately prior to the Effective Time (the "**Old Common Stock**") shall automatically without further action on the part of the Corporation or any holder of Old Common Stock, be reclassified, combined, converted and changed into one (1) fully paid and nonassessable share of common stock, par value $0.01 per share (the "**New Common Stock**"), subject to the treatment of fractional share interests as described below (the "**Reverse Stock Split**"). The conversion of the Old Common Stock into New Common Stock will be deemed to occur at the Effective Time. From and after the Effective Time, certificates representing the Old Common Stock shall represent the number of shares of New Common Stock into which such Old Common Stock shall have been converted pursuant to this Certificate of Amendment. No fractional shares shall be issued in connection with the Reverse Stock Split. A holder of Common Stock who would otherwise be entitled to receive a fractional share as a result of the Reverse Stock Split will receive one whole share of Common Stock in lieu of such fractional share.

THIRD: The foregoing amendment shall be effective at 12.01 a.m. EST on Wednesday, January 15, 2020 (the "**Effective Time**").

FOURTH: That pursuant to resolution of the Board of Directors, the proposed amendment was submitted to the stockholders of the Corporation for consideration at the special meeting of stockholders held on December 13, 2019 and was duly adopted by the stockholders of the Corporation in accordance with the applicable provisions of Section 242 of the General Corporation Law of Delaware.

[*Signature page follows.*]

IN WITNESS WHEREOF, the Corporation has caused this Certificate of Amendment to be duly adopted and executed in its corporate name and on its behalf by its duly authorized officer as of the 14th day of January, 2020.

INTERPACE BIOSCIENCES, INC.

By: */s/ Jack E. Stover*
Name: Jack E. Stover
Title: President and Chief Executive Officer

[Signature Page to Certificate of Amendment]

INTERPACE BIOSCIENCES, INC.

CERTIFICATE OF DESIGNATION OF PREFERENCES, RIGHTS AND LIMITATIONS

OF

SERIES B CONVERTIBLE PREFERRED STOCK

PURSUANT TO SECTION 151 OF THE

DELAWARE GENERAL CORPORATION LAW

INTERPACE BIOSCIENCES, INC., a Delaware corporation (the "**Corporation**"), in accordance with the provisions of Section 103 of the Delaware General Corporation Law (the "**DGCL**") does hereby certify that, in accordance with Section 151 of the DGCL, the following resolution was duly adopted by the Board of Directors of the Corporation on January 14, 2020:

RESOLVED, pursuant to authority expressly set forth in the Certificate of Incorporation of the Corporation (the "**Certificate of Incorporation**"), the issuance of a series of Preferred Stock designated as the Series B Convertible Preferred Stock, par value $0.01 per share, of the Corporation is hereby authorized and the designation, number of shares, powers, preferences, rights, qualifications, limitations and restrictions thereof (in addition to any provisions set forth in the Certificate of Incorporation that are applicable to the Preferred Stock of all classes and series) are hereby fixed, and this Certificate of Designation of Preferences, Rights and Limitations of Series B Convertible Preferred Stock is hereby approved as follows:

SERIES B CONVERTIBLE PREFERRED STOCK

Section 1. Definitions. For the purposes hereof, the following terms shall have the following meanings:

"**1315 Capital**" means 1315 Capital II, L.P., a Delaware limited partnership, including its successors and assigns.

"**Ampersand**" means Ampersand 2018 Limited Partnership, a Delaware limited partnership, including its successors and assigns.

"**Affiliate**" means, with respect to any Person, any other Person that, directly or indirectly through one or more intermediaries, controls, is controlled by or is under common control with such Person, as such terms are used in and construed under Rule 405 under the Securities Act. With respect to a Purchaser, any investment fund or managed account that is managed on a discretionary basis by the same investment manager as such Purchaser will be deemed to be an Affiliate of such Purchaser.

"**Business Day**" means any day except Saturday, Sunday, any day which shall be a federal legal holiday in the United States or any day on which banking institutions in the State of New York are authorized or required by law or other governmental action to close.

"**Commission**" means the U.S. Securities and Exchange Commission.

"**Common Stock**" means the Corporation's common stock, par value $0.01 per share.

"**Conversion Shares**" means, collectively, the shares of Common Stock issuable upon conversion of the shares of Series B Preferred Stock in accordance with the terms hereof.

"**Convertible Securities**" shall mean any evidences of indebtedness, shares or other securities directly or indirectly convertible into or exchangeable for Common Stock, but excluding Options.

"**Deemed Liquidation**" shall mean (a) a merger or consolidation in which (i) the Corporation is a constituent party or (ii) a subsidiary of the Corporation is a constituent party and the Corporation issues shares of its capital stock pursuant to such merger or consolidation, except any such merger or consolidation involving the Corporation or a subsidiary in which the shares of capital stock of the Corporation outstanding immediately prior to such merger or consolidation continue to represent, or are converted into or exchanged for shares of capital stock that represent, immediately following such merger or consolidation, at least a majority, by voting power, of the capital stock of (1) the surviving or resulting corporation; or (2) if the surviving or resulting corporation is a wholly owned subsidiary of another corporation immediately following such merger or consolidation, the parent corporation of such surviving or resulting corporation; or (b) the sale, lease, transfer, exclusive license or other disposition, in a single transaction or series of related transactions, by the Corporation or any subsidiary of the Corporation of all or substantially all the assets of the Corporation and its subsidiaries taken as a whole, or the sale or disposition (whether by merger, consolidation or otherwise) of one or more subsidiaries of the Corporation if substantially all of the assets of the Corporation and its subsidiaries taken as a whole are held by such subsidiary or subsidiaries, except where such sale, lease, transfer, exclusive license or other disposition is to a wholly owned subsidiary of the Corporation.

"**DGCL**" shall mean the Delaware General Corporation Law.

"**Exchange Act**" means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

"**Holder**" means any holder of Series B Preferred Stock.

"**Issuance Date**" means January 15, 2020.

"**Option**" shall mean rights, options or warrants to subscribe for, purchase or otherwise acquire Common Stock or Convertible Securities.

"**Person**" means any individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

"**Preferred Stock**" means the Corporation's preferred stock, par value $0.01 per share.

"**Series B Conversion Price**" means an amount initially equal to six dollars ($6.00) (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares).

"**Series B Conversion Ratio**" means, for each share of Series B Preferred Stock, the ratio obtained by dividing the Series B Liquidation Amount of such share by the Series B Conversion Price.

"**Series B Liquidation Amount**" has the meaning set forth in Section 5(a).

"Series B Liquidation Value" means an amount equal to the Series B Liquidation Amount divided by the number of shares of Series B Preferred Stock outstanding.

"**Series B Mandatory Conversion Price**" means an amount equal to twelve dollars ($12.00).

"**Stated Value**" means $1,000 per share.

"**Trading Day**" means a day on which the Common Stock is traded for any period on a principal securities exchange or if the Common Stock is not traded on a principal securities exchange, on a day that the Common Stock is traded on another securities market on which the Common Stock is then being traded.

Section 2. Designation, Amount and Par Value; Assignment.

(a) The Preferred Stock designated by this Certificate of Designation shall be designated as the Corporation's Series B Convertible Preferred Stock (the '**Series B Preferred Stock**") and the number of shares so designated shall be 47,000.

(b) The Corporation shall register shares of the Series B Preferred Stock, upon records to be maintained by the Corporation for that purpose (the **Series B Preferred Stock Register**"), in the name of the Holders thereof from time to time. The Corporation may deem and treat the registered Holder of shares of Series B Preferred Stock as the absolute owner thereof for the purpose of any conversion thereof and for all other purposes. Shares of Series B Preferred Stock may be issued solely in book-entry form or, if requested by any Holder, such Holder's shares may be issued in certificated form. The Corporation shall register the transfer of any shares of Series B Preferred Stock in the Series B Preferred Stock Register, upon surrender of the certificates (if applicable) evidencing such shares to be transferred, duly endorsed by the Holder thereof, to the Corporation at its address specified herein. Upon any such registration or transfer, a new certificate (or book-entry notation, if applicable) evidencing the shares of Series B Preferred Stock so transferred shall be issued to the transferee and a new certificate (or book-entry notation, if applicable) evidencing the remaining portion of the shares not so transferred, if any, shall be issued to the transferring Holder, in each case, within two (2) Business Days. The provisions of this Certificate of Designation are intended to be for the benefit of all Holders from time to time and shall be enforceable by any such Holder.

Section 3. Dividends. Dividends may be declared and paid on the Series B Preferred Stock from funds lawfully available therefor as and when determined by the Corporation's Board of Directors. The Corporation shall not declare, pay or set aside any dividends on shares of any other class or series of capital stock of the Corporation (other than dividends on shares of Common Stock payable in shares of Common Stock) unless the Holders of the Series B Preferred Stock then outstanding shall first receive, or simultaneously receive, a dividend on each outstanding share of Series B Preferred Stock in an amount at least equal to (A) in the case of a dividend on Common Stock or any class or series that is convertible into Common Stock, that dividend per share of Series B Preferred Stock as would equal the product of (1) the dividend payable on each share of such class or series determined, if applicable, as if all shares of such class or series had been converted into Common Stock and (2) the number of shares of Common Stock issuable upon conversion of a share of Series B Preferred Stock pursuant to Section 6, in each case calculated on the record date for determination of holders entitled to receive such dividend or (B) in the case of a dividend on any class or series that is not convertible into Common Stock, at a rate per share of Series B Preferred Stock determined by (1) dividing the amount of the dividend payable on each share of such class or series of capital stock by the original issuance price of such class or series of capital stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares) and (2) multiplying such fraction by an amount equal to the Stated Value; provided that, if the Corporation declares, pays or sets aside, on the same date, a dividend on shares of more than one class or series of capital stock of the Corporation, the dividend payable to the Holders of Series B Preferred Stock pursuant to this Section 3 shall be calculated based upon the dividend on the class or series of capital stock that would result in the highest Series B Preferred Stock dividend.

Section 4. Voting Rights.

(a) Series B Preferred Stock Voting Rights. On any matter presented to the stockholders of the Corporation for their action or consideration at any meeting of stockholders of the Corporation (or by written consent of stockholders in lieu of meeting), each Holder of outstanding shares of Series B Preferred Stock shall be entitled to cast the number of votes equal to the number of whole shares of Common Stock into which the shares of Series B Preferred Stock held by such Holder are convertible as of the record date for determining stockholders entitled to vote on such matter. Except as provided by law or by the other provisions of this Certificate of Designation, Holders of Series B Preferred Stock shall vote together with the holders of Common Stock as a single class and on an as-converted to Common Stock basis.

(b) Directors.

(i) For so long as Ampersand holds at least sixty percent (60%) of the Series B Preferred Stock held by Ampersand as of the Issuance Date, Ampersand shall be entitled to elect two (2) directors of the Corporation, provided that one (1) director elected by Ampersand must qualify as an "independent director" under Rule 5605(a)(2) of the of the listing rules of the Nasdaq Stock Market (or any successor rule) or under any similar rule promulgated by such other exchange on which the Corporation's securities are then listed or designated. For so long as Ampersand holds less than sixty percent (60%) of the Series B Preferred Stock held by Ampersand as of the Issuance Date but at least forty percent (40%) of the Series B Preferred Stock held by Ampersand as of the Issuance Date, Ampersand shall be entitled to elect one (1) director of the Corporation.

(ii) For so long as 1315 Capital holds at least sixty percent (60%) of the Series B Preferred Stock held by 1315 Capital as of the Issuance Date, 1315 Capital shall be entitled to elect two (2) directors of the Corporation, provided that one (1) director elected by 1315 Capital must qualify as an "independent director" under Rule 5605(a)(2) of the of the listing rules of the Nasdaq Stock Market (or any successor rule) or under any similar rule promulgated by such other exchange on which the Corporation's securities are then listed or designated. For so long as 1315 Capital holds less than sixty percent (60%) of the Series B Preferred Stock held by 1315 Capital as of the Issuance Date but at least forty percent (40%) of the Series B Preferred Stock held by 1315 Capital as of the Issuance Date, 1315 Capital shall be entitled to elect one (1) director of the Corporation.

(iii) The holders of record of the shares of Common Stock and of any other class or series of voting stock (including the Series B Preferred Stock), exclusively and voting together as a single class, shall, subject to the rights of any additional series of Preferred Stock that may be established from time to time, be entitled to elect the balance of the total number of directors of the Corporation. At any meeting held for the purpose of electing a director, the presence in person or by proxy of the holders of a majority of the outstanding shares of the class or series entitled to elect such director shall constitute a quorum for the purpose of electing such director.

(iv) Any director elected pursuant to this Section 4(b) may be removed without cause by, and only by, the affirmative vote of the holders of the shares of the class or series of capital stock entitled to elect such director or directors, given either at a special meeting of such stockholders duly called for that purpose or pursuant to a written consent of stockholders. A vacancy in any directorship filled by the holders of any class or series shall be filled only by vote or written consent in lieu of a meeting of the holders of such class or series or by any remaining director or directors elected by the holders of such class or series pursuant to this Section 4(b).

(c) Protective Provisions. Notwithstanding anything in this Certificate of Designation to the contrary, for so long as any shares of the Series B Preferred Stock remain outstanding, the following actions may only be taken by the Corporation or any of its direct or indirect subsidiaries with the written consent of Holders representing at least seventy-five percent (75%) of the outstanding shares of Series B Preferred Stock (voting as a single class):

(i) amend, waive, alter or repeal the preferences, rights, privileges or powers of the Holders of the Series B Preferred Stock;

(ii) amend, alter or repeal any provision of this Certificate of Designation in a manner that is adverse to the Holders of Series B Preferred Stock;

(iii) authorize, create or issue any equity securities senior to or *pari passu* with the Series B Preferred Stock; or

(iv) increase or decrease the number of directors constituting the Board of Directors of the Corporation.

(d) Additional Protective Provisions. Notwithstanding anything in this Certificate of Designation to the contrary, for so long as at least thirty percent (30%) of the Series B Preferred Stock outstanding as of the Issuance Date remains outstanding (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares), the following actions may only be taken by the Corporation or any of its direct or indirect subsidiaries with the written consent with the consent of Holders representing at least seventy-five percent (75%) of the outstanding shares of Series B Preferred Stock (voting as a single class):

(i) (1) authorize, create or issue any debt securities for borrowed money or funded debt pursuant to which the Corporation or any of its direct or indirect subsidiaries issues shares, warrants or any other convertible security in the same transaction or a series of related transactions; or (2) authorize, create or issue any debt securities for borrowed money or funded debt pursuant to which the Corporation or any of its direct or indirect subsidiaries does not issue shares, warrants or any other convertible security in the same transaction or a series of related transactions exceeding $4.5 million initially (the "**Debt Threshold**"), excluding, however: (i) any capitalized and operating leases entered into by the Corporation or its direct or indirect subsidiaries in the ordinary course of business consistent with past practice and (ii) any debt incurred by the Corporation pursuant to the terms of the Corporation's existing term loan and credit facility with Silicon Valley Bank; provided, that if the aggregate consolidated revenue recognized by the Corporation and its direct or indirect subsidiaries (the "**Combined Revenue**") as reported by the Corporation on Form 10-K as filed with the Commission for any fiscal year ending after the Issuance Date exceeds $45 million dollars, the Debt Threshold for the following fiscal year shall increase to an amount equal to: (x) ten percent (10%); multiplied by (y) the Combined Revenue as reported by the Corporation on Form 10-K as filed with the Commission for the previous fiscal year;

(ii) merge with or acquire all or substantially all of the assets of one or more other companies or entities with a value in excess of $20 million (the "**Acquisition Threshold**"); provided, that the Acquisition Threshold shall increase on a straight line basis to an amount up to $40 million, but in no event greater than $40 million, to the extent Combined Revenue for the then-most recently completed quarterly period as reported by the Corporation on Form 10-K as filed with the Commission or Form 10-Q as filed with the Commission, as applicable, falls between the Combined Revenue for the Corporation's fiscal quarter ended on September 30, 2019, and 100% greater than the Combined Revenue for the Corporation's fiscal quarter ended on September 30, 2019;

(iii) materially change the nature of the business of the Corporation or any of its direct or indirect subsidiaries as it is proposed to be conducted as of the Issuance Date.;

(iv) consummate any Liquidation (as defined below);

(v) transfer, by sale, exclusive license or otherwise, material intellectual property rights of the Corporation or any of its direct or indirect subsidiaries, other than licenses, transfers or sales of products accomplished in the ordinary course of business consistent with past practice;

(vi) declare or pay any cash dividend or make any cash distribution on any equity interests of the Corporation other than the Series B Preferred Stock;

(vii) repurchase or redeem any shares of capital stock of the Corporation, except for: (1) the redemption of the Series B Preferred Stock pursuant to Section 5(d); or (2) repurchases of Common Stock under agreements previously approved by the Board of Directors of the Corporation with employees, consultants, advisors or others who performed services for the Corporation or any direct or indirect subsidiary in connection with the cessation of such employment or service;

(viii) (1) incur any additional individual debt, indebtedness for borrowed money or other additional liabilities pursuant to which the Corporation or any of its direct or indirect subsidiaries issues shares, warrants or any other convertible security in the same transaction or a series of related transactions; or (2) incur any individual debt, indebtedness for borrowed money or other liabilities pursuant to which the Corporation or any of its direct or indirect subsidiaries does not issue shares, warrants or any other convertible security in the same transaction or a series of related transactions in excess of the Debt Threshold (in each case, excluding: (x) any capitalized and operating leases entered into by the Corporation or its direct or indirect subsidiaries in the ordinary course of business consistent with past practice; (y) any debt incurred by the Corporation pursuant to the terms of the Corporation's existing term loan and credit facility with Silicon Valley Bank; and (z) any purchase money financing in connection with the acquisition of equipment or otherwise);

(ix) change any accounting methods or practices of the Corporation or any of its direct or indirect subsidiaries, except for those changes required by GAAP or applicable regulatory agencies or authorities, including but not limited to the Securities and Exchange Commission and the Financial Accounting Standards Board, in each case, as consented to by the Corporation's independent auditors; or

(x) conduct a public offering of Common Stock registered with the Securities and Exchange Commission, including any at-the-market offering of the Corporation's Common Stock.

Section 5. Liquidation.

(a) In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation or Deemed Liquidation (a "**Liquidation**"), the Holders of shares of Series B Preferred Stock then outstanding shall be entitled to be paid out of the assets of the Corporation available for distribution to its stockholders (on a pari passu basis with the holders of any class or series of Preferred Stock ranking on liquidation on a parity with the Series B Preferred Stock), and before any payment shall be made to the holders of Common Stock or any other class or series of Preferred Stock ranking on liquidation junior to the Series B Preferred Stock by reason of their ownership thereof, an amount per share of Series B Preferred Stock equal to the greater of (i) the Stated Value of such share of Series B Preferred Stock, plus any dividends declared but unpaid thereon, or (ii) such amount per share as would have been payable had each such share been converted into Common Stock pursuant to Section 6 immediately prior to such Liquidation, (the amount payable in respect of shares of Series B Preferred Stock pursuant to this sentence is hereinafter referred to as the "**Series B Liquidation Amount**"). If upon any such Liquidation, the assets of the Corporation available for distribution to its stockholders shall be insufficient to pay the Holders of shares of Series B Preferred Stock and any series of Preferred Stock ranking on liquidation on a parity with the Series B Preferred Stock the full amount to which they shall be entitled under this Section 5(a), the Holders of shares of Series B Preferred Stock and any series of Preferred Stock ranking on liquidation on a parity with the Series B Preferred Stock shall share ratably in any distribution of the assets available for distribution in proportion to the respective amounts which would otherwise be payable in respect of the shares held by them upon such distribution if all amounts payable on or with respect to such shares were paid in full.

(b) In the event of any Liquidation, after the payment of all preferential amounts required to be paid to the Holders of shares of Series B Preferred Stock and any other series of Preferred Stock ranking on liquidation senior to the Common Stock, the remaining assets of the Corporation available for distribution to its stockholders shall be distributed among the holders of shares of Common Stock, pro rata based on the number of shares held by each such holder.

(c) The Corporation shall not have the power to effect a Deemed Liquidation unless the definitive agreement regarding such transaction provides that the consideration payable to the stockholders of the Corporation shall be allocated among the holders of capital stock of the Corporation in accordance with Section 5 of this Certificate of Designation.

(d) If following a Deemed Liquidation the Corporation does not effect a dissolution of the Corporation under the General Corporation Law within sixty (60) days after such Deemed Liquidation, then (i) the Corporation shall send a written notice to each Holder of Series B Preferred Stock no later than the sixtieth (60th) day after the Deemed Liquidation advising such Holders of their right (and the requirements to be met to secure such right) pursuant to the terms of the following clause (ii) to require the redemption of such shares of Series B Preferred Stock, and (ii) if the Holders of at least seventy-five percent (75%) of the then outstanding shares of Series B Preferred Stock so request in a written instrument delivered to the Corporation not later than sixty (60) days after receipt of such notice, the Corporation shall use the consideration received by the Corporation for such Deemed Liquidation (net of any retained liabilities associated with the assets sold or technology licensed, as determined in good faith by the Board of Directors of the Corporation) (the "**Net Proceeds**"), to the extent legally available therefor, on the one hundred fiftieth (150th) day after such Deemed Liquidation, to redeem all outstanding shares of Series B Preferred Stock at a price per share equal to the Series B Liquidation Value. Notwithstanding the foregoing, in the event of a redemption pursuant to the preceding sentence, if the Net Proceeds are not sufficient to redeem all outstanding shares of Series B Preferred Stock and of any other series of Preferred Stock ranking on redemption on parity with the Series B Preferred Stock that is required to then be redeemed, or if the Corporation does not have sufficient lawfully available funds to effect such redemption, the Corporation shall first redeem a pro rata portion of each Holder's shares of Series B Preferred Stock and any such other series of Preferred Stock ranking on redemption on a parity with the Series B Preferred Stock to the fullest extent of such Net Proceeds or such lawfully available funds, as the case may be, based on the respective amounts which would otherwise be payable in respect of the shares to be redeemed if the legally available funds were sufficient to redeem all such shares. If upon any such redemption, the assets of the Corporation lawfully available to effect such redemption shall be insufficient to pay the Holders of shares of Series B Preferred Stock and any series of Preferred Stock ranking on redemption on a parity with the Series B Preferred Stock, the full amount to which they shall be entitled under this Section 5(d), the Holders of shares of Series B Preferred Stock and any series of Preferred Stock ranking on redemption on a parity with the Series B Preferred Stock shall share ratably in any distribution of the assets lawfully available for such redemption in proportion to the respective amounts which would otherwise be payable in respect of the shares held by them upon such redemption if all amounts payable on or with respect to such shares were paid in full, and shall redeem the remaining shares to have been redeemed as soon as practicable after the Corporation has funds legally available therefor. Prior to the distribution or redemption provided for in this Section 5(d), the Corporation shall not expend or dissipate the consideration received for such Deemed Liquidation, except to discharge expenses incurred in connection with such Deemed Liquidation or in the ordinary course of business consistent with past practice.

(e) The amount deemed paid or distributed to the holders of capital stock of the Corporation upon any Liquidation Event shall be the cash or the value of the property, rights or securities paid or distributed to such holders by the Corporation or the acquiring person, firm or other entity; provided, that the value of any such non-cash property, rights or securities shall be determined in good faith by the Board of Directors of the Corporation.

Section 6. Conversion of Series B Preferred Stock into Common Stock.

(a) Conversion of Series B Preferred Stock into Common Stock at Option of Holder.

Subject to Section 6(c) below, each share of Series B Preferred Stock shall be convertible, at any time and from time to time from and after the Issuance Date, at the option of the Holder thereof, into a number of shares of Common Stock equal to the product of the Series B Conversion Ratio and the number of shares of Series B Preferred Stock to be converted. Holders shall effect conversions of Series B Preferred Stock into Common Stock by providing the Corporation with the form of conversion notice attached hereto as **Annex A** (a "**Notice of Conversion**"), duly completed and executed. Provided the Corporation's transfer agent is participating in the Depository Trust Corporation ("**DTC**") Fast Automated Securities Transfer program, the Notice of Conversion may specify, at the Holder's election, whether the applicable Conversion Shares shall be credited to the DTC participant account nominated by the Holder through DTC's Deposit Withdrawal Agent Commission system (a " **DWAC Delivery**"). The "**Optional Conversion Date**", or the date on which a conversion shall be deemed effective, shall be defined as the Trading Day after the Trading Date that the Notice of Conversion, completed and executed, is sent by facsimile or other electronic transmission to, and received during regular business hours by, the Corporation; provided that the original certificate(s) (if any) representing such shares of Series B Preferred Stock being converted, duly endorsed, and the accompanying Notice of Conversion, are received by the Corporation within two (2) Trading Days thereafter. In all other cases, the Optional Conversion Date shall be defined as the Trading Day after the Trading Date on which the original shares of Series B Preferred Stock being converted, duly endorsed, and the accompanying Notice of Conversion, are received by the Corporation.

(b) Mandatory Conversion of Series B Preferred Stock into Common Stock. If the Corporation consummates the sale of shares of Common Stock to the public in a firm-commitment underwritten public offering pursuant to an effective registration statement under the Securities Act of 1933, as amended, pursuant to which (A) the price per share of the Common Stock in such offering is at least the Series B Mandatory Conversion Price (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares) and (B) such offering results in at least $25 million in proceeds, net of the underwriting discount and commissions, to the Corporation and the Common Stock continues to be listed for trading on the Nasdaq Capital Market or another Exchange such as NYSE (such offering, an "**Underwritten Offering**", and the date of the consummation of such Underwritten Offering is referred to herein as the "**Mandatory Conversion Date**" and together with each Optional Conversion Date, a "**Conversion Date**"), (i) all outstanding shares of Series B Preferred Stock shall automatically be converted into shares of Common Stock, at the then effective Series B Conversion Ratio and (ii) such shares may not be reissued by the Corporation. The provisions of Section 6(c) shall apply, with such necessary changes in the details thereof as are necessitated by the context, to the conversion of shares of Series B Preferred Stock into Common Stock pursuant to this Section 6(b). Notwithstanding the foregoing, an Underwritten Offering shall not include, and shares of Series B Preferred Stock will not automatically convert to shares of Common Stock upon the consummation of, any Underwritten Offering that includes the issuance of warrants to purchase capital stock of the Corporation or any other Convertible Security.

(c) Mechanics of Conversion of Series B Preferred Stock into Common Stock.

(i) Delivery of Certificate or Electronic Issuance Upon Conversion. Not later than three (3) Trading Days after the applicable Conversion Date (the "**Share Delivery Date**"), the Corporation shall electronically transfer the number of Conversion Shares set forth in a Notice of Conversion being acquired upon the conversion of shares of Series B Preferred Stock by crediting the DTC participant account nominated by the Holder through DTC's DWAC system. If in the case such shares are not electronically delivered to or as directed by, the applicable Holder by the Share Delivery Date, the applicable Holder shall be entitled to elect to rescind such Notice of Conversion by written notice to the Corporation at any time on or before its receipt of such certificate or certificates for Conversion Shares or electronic receipt of such shares, as applicable, in which event the Corporation shall promptly return to such Holder any original Series B Preferred Stock certificate delivered to the Corporation and such Holder shall promptly direct the return of any shares of Common Stock delivered to the Holder through the DWAC system, representing the shares of Series B Preferred Stock unsuccessfully tendered for conversion to the Corporation.

(ii) Obligation Absolute. Subject to Holder's right to rescind a Notice of Conversion pursuant to Section 6(c)(i) above, the Corporation's obligation to issue and deliver the Conversion Shares upon conversion of Series B Preferred Stock in accordance with the terms hereof are absolute and unconditional, irrespective of any action or inaction by a Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by such Holder or any other Person of any obligation to the Corporation or any violation or alleged violation of law by such Holder or any other Person, and irrespective of any other circumstance which might otherwise limit such obligation of the Corporation to such Holder in connection with the issuance of such Conversion Shares. Nothing herein shall limit a Holder's right to pursue actual damages for the Corporation's failure to deliver Conversion Shares within the period specified herein and such Holder shall have the right to pursue all remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief; provided that Holder shall not receive duplicate damages for the Corporation's failure to deliver Conversion Shares within the period specified herein. The exercise of any such rights shall not prohibit a Holder from seeking to enforce damages pursuant to any other Section hereof or under applicable law.

(iii) Compensation for Buy-In on Failure to Timely Deliver Shares Upon Conversion. If the Corporation fails to effect a DWAC Delivery that represents shares of Common Stock by the Share Delivery Date pursuant to Section 6(c)(i) (other than a failure caused by incorrect or incomplete information provided by Holder to the Corporation), and if after such Share Delivery Date such Holder is required to or otherwise purchases (in an open market transaction or otherwise), shares of Common Stock to deliver in satisfaction of a sale by such Holder of the Conversion Shares which such Holder was entitled to receive upon the conversion relating to such Share Delivery Date (a "**Buy-In**"), then the Corporation shall (A) pay in cash to such Holder (in addition to any other remedies available to or elected by such Holder) the amount by which (x) such Holder's total purchase price (including any brokerage commissions) for the shares of Common Stock so purchased exceeds (y) the product of (1) the aggregate number of shares of Common Stock that such Holder was entitled to receive from the conversion at issue multiplied by (2) the actual sale price at which the sell order giving rise to such purchase obligation was executed (including any brokerage commissions) and (B) at the option of such Holder, either reissue (if surrendered) the shares of Series B Preferred Stock equal to the number of shares of Series B Preferred Stock submitted for conversion or deliver to such Holder the number of shares of Common Stock that would have been issued if the Corporation had timely complied with its delivery requirements under Section 6(c)(i). For example, if a Holder purchases shares of Common Stock having a total purchase price of $11,000 to cover a Buy-In with respect to an attempted conversion of shares of Series B Preferred Stock with respect to which the actual sale price (including any brokerage commissions) giving rise to such purchase obligation was a total of $10,000 under clause (A) of the immediately preceding sentence, the Corporation shall be required to pay such Holder $1,000. The Holder shall provide the Corporation written notice, within three (3) Trading Days after the occurrence of a Buy-In, indicating the amounts payable to such Holder in respect of such Buy-In together with applicable confirmations and other evidence reasonably requested by the Corporation. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Corporation's failure to timely effect a DWAC Delivery representing shares of Common Stock upon conversion of the shares of Series B Preferred Stock as required pursuant to the terms hereof; provided, however, that the Holder shall not be entitled to both (i) require the reissuance of the shares of Series B Preferred Stock submitted for conversion for which such conversion was not timely honored and (ii) receive the number of shares of Common Stock that would have been issued if the Corporation had timely complied with its delivery requirements under Section 6(c)(i).

(d) Reservation of Shares Issuable Upon Conversion. The Corporation covenants that it will, at all times reserve and keep available out of its authorized and unissued shares of Common Stock for the sole purpose of issuance upon conversion of the Series B Preferred Stock, free from preemptive rights or any other actual contingent purchase rights of Persons other than the Holders of the Series B Preferred Stock, not less than such aggregate number of shares of the Common Stock as shall be issuable (taking into account the adjustments of Section 7) upon the conversion of all outstanding shares of Series B Preferred Stock. The Corporation covenants that all shares of Common Stock that shall be so issuable shall, upon issue, be duly authorized, validly issued, fully paid, non-assessable and free and clear of all liens and other encumbrances.

(e) Fractional Shares. No fractional shares or scrip representing fractional shares of Common Stock shall be issued upon the conversion of the Series B Preferred Stock. As to any fraction of a share of Common Stock which a Holder would otherwise be entitled to receive upon such conversion, the Corporation shall pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Series B Conversion Price.

(f) Transfer Taxes. The issuance of book entry notations for shares of the Common Stock upon conversion of the Series B Preferred Stock shall be made without charge to any Holder for any documentary stamp or similar taxes that may be payable in respect of the issue of such book entry notation, provided that the Corporation shall not be required to pay any tax that may be payable in respect of any transfer involved in the issuance of such book entry notation upon conversion in a name other than that of the registered Holder(s) of such shares of Series B Preferred Stock, and the Corporation shall not be required to issue such book entry notation unless or until the Person or Persons requesting the issuance thereof shall have paid to the Corporation the amount of such tax or shall have established to the satisfaction of the Corporation that such tax has been paid.

(g) Status as Stockholder. Upon each Conversion Date and Mandatory Conversion Date: (i) the shares of Series B Preferred Stock being converted shall be deemed converted into shares of Common Stock; and (ii) the Holder's rights as a holder of such converted shares of Series B Preferred Stock shall cease and terminate, excepting only the right to receive book entry notations for such shares of Common Stock and to any remedies provided herein or otherwise available at law or in equity to such Holder because of a failure by the Corporation to comply with the terms of this Certificate of Designation. In all cases, the Holder shall retain all of its rights and remedies for the Corporation's failure to convert Series B Preferred Stock.

Section 7. Certain Adjustments.

(a) Stock Dividends and Stock Splits. If the Corporation, at any time while any shares of Series B Preferred Stock are outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions payable in shares of Common Stock with respect to the then outstanding shares of Common Stock; (ii) subdivides outstanding shares of Common Stock into a larger number of shares; or (iii) combines (including by way of a reverse stock split) outstanding shares of Common Stock into a smaller number of shares, then the Series B Conversion Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding any treasury shares of the Corporation) outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event (excluding any treasury shares of the Corporation). Any adjustment made pursuant to this Section 7(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision or combination.

(b) Adjustments for Other Dividends and Distributions. In the event the Corporation at any time or from time to time after the Issuance Date shall make or issue, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable in securities of the Corporation (other than a distribution of shares of Common Stock in respect of outstanding shares of Common Stock) or in other property, then and in each such event the Holders of Series B Preferred Stock shall receive, simultaneously with the distribution to the holders of Common Stock, a dividend or other distribution of such securities or other property in an amount equal to the amount of such securities or other property as they would have received if all outstanding shares of Series B Preferred Stock had been converted into Common Stock on the date of such event.

(c) Adjustment for Merger or Reorganization, etc. Subject to the provisions of Section 5, if there shall occur any reorganization, recapitalization, reclassification, consolidation or merger involving the Corporation in which the Common Stock (but not the Series B Preferred Stock) is converted into or exchanged for securities, cash or other property (other than a transaction covered by Section 7(a) or Section 7(b)), then, following any such reorganization, recapitalization, reclassification, consolidation or merger, each share of Series B Preferred Stock shall thereafter be convertible in lieu of the Common Stock into which it was convertible prior to such event into the kind and amount of securities, cash or other property which a holder of the number of shares of Common Stock of the Corporation issuable upon conversion of one share of Series B Preferred Stock immediately prior to such reorganization, recapitalization, reclassification, consolidation or merger would have been entitled to receive pursuant to such transaction; and, in such case, appropriate adjustment (as determined in good faith by the Board of Directors of the Corporation) shall be made in the application of the provisions in this Certificate of Designation with respect to the rights and interests thereafter of the Holders of the Series B Preferred Stock, to the end that the provisions set forth in this Certificate of Designation (including provisions with respect to changes in and other adjustments of the Series B Conversion Price) shall thereafter be applicable, as nearly as reasonably may be, in relation to any securities or other property thereafter deliverable upon the conversion of the Series B Preferred Stock.

(d) Calculations. All calculations under this Certificate of Designation shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 7, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding any treasury shares of the Corporation) issued and outstanding.

(e) Notice to the Holders.

(i) Adjustment to Series B Conversion Price. Whenever the Series B Conversion Price is adjusted pursuant to any provision of this Section 7, the Corporation shall promptly deliver to each Holder a notice setting forth the Series B Conversion Ratio after such adjustment and setting forth a brief statement of the facts requiring such adjustment.

(ii) Other Notices. If (A) the Corporation shall declare a dividend (or any other distribution in whatever form) on the Common Stock, (B) the Corporation shall declare a special nonrecurring cash dividend on or a redemption of the Common Stock, (C) the Corporation shall authorize the granting to all holders of the Common Stock of rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights, (D) the approval of any stockholders of the Corporation shall be required in connection with any reclassification of the Common Stock, any consolidation or merger to which the Corporation is a party, any Liquidation, or any compulsory share exchange whereby the Common Stock is converted into other securities, cash or property, or (E) consent of the Holders of Series B Preferred Stock is required pursuant to Section 4(c) or Section 4(d), then, in each case, the Corporation shall cause to be filed at each office or agency maintained for the purpose of conversion of the shares of Series B Preferred Stock, and shall cause to be delivered to each Holder at its last address as it shall appear upon the stock books of the Corporation, at least ten (10) calendar days prior to the applicable record or effective date hereinafter specified, a notice stating (x) the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of the Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined or (y) the date on which such reclassification, consolidation, merger, sale, transfer, Liquidation or share exchange is expected to become effective or close, and the date as of which it is expected that holders of the Common Stock of record shall be entitled to exchange their shares of the Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange, provided that the failure to deliver such notice or any defect therein or in the delivery thereof shall not affect the validity of the corporate action required to be specified in such notice.

Section 8. Miscellaneous.

(a) Lost or Mutilated Stock Certificates. If a Holder's certificate representing shares of Series B Preferred Stock shall be mutilated, lost, stolen or destroyed, the Corporation shall execute and deliver, if requested by the Holder, in exchange and substitution for and upon cancellation of a mutilated certificate, or in lieu of or in substitution for a lost, stolen or destroyed certificate, a new certificate for the shares of Series B Preferred Stock so mutilated, lost, stolen or destroyed, but only upon receipt of evidence of such loss, theft or destruction of such certificate, and of the ownership thereof, reasonably satisfactory to the Corporation and, in each case, customary and reasonable indemnity, if requested, without the requirement to post a bond. Applicants for a new certificate under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Corporation may prescribe, without the requirement to post a bond.

(b) Waiver. Any waiver by the Corporation or a Holder of a breach of any provision of this Certificate of Designation shall not operate as or be construed to be a waiver of any other breach of such provision or of any breach of any other provision of this Certificate of Designation or a waiver by any other Holders. The failure of the Corporation or a Holder to insist upon strict adherence to any term of this Certificate of Designation on one or more occasions shall not be considered a waiver or deprive that party (or any other Holder) of the right thereafter to insist upon strict adherence to that term or any other term of this Certificate of Designation. Any waiver by the Corporation or a Holder must be in writing. Notwithstanding any provision in this Certificate of Designation to the contrary, any provision contained herein and any right of the Holders of Series B Preferred Stock granted hereunder may be waived as to all shares of Series B Preferred Stock (and the Holders thereof) upon the written consent of the Holders of at least seventy-five percent (75%) of the shares of Series B Preferred Stock (voting as a single class) then outstanding, unless a higher percentage is required by the DGCL, in which case the written consent of the Holders of not less than such higher percentage shall be required.

(c) Severability. If any provision of this Certificate of Designation is invalid, illegal or unenforceable, the balance of this Certificate of Designation shall remain in effect, and if any provision is inapplicable to any Person or circumstance, it shall nevertheless remain applicable to all other Persons and circumstances. If it shall be found that any interest or other amount deemed interest due hereunder violates the applicable law governing usury, the applicable rate of interest due hereunder shall automatically be lowered to equal the maximum rate of interest permitted under applicable law.

(d) Next Business Day. Whenever any payment or other obligation hereunder shall be due on a day other than a Business Day, such payment shall be made on the next succeeding Business Day.

(e) Headings. The headings contained herein are for convenience only, do not constitute a part of this Certificate of Designation and shall not be deemed to limit or affect any of the provisions hereof.

(f) Status of Converted Series B Preferred Stock. If any shares of Series B Preferred Stock shall be converted or redeemed by the Corporation, such shares shall resume the status of authorized but unissued shares of preferred stock and shall no longer be designated as Series B Preferred Stock.

****

IN WITNESS WHEREOF, Interpace Biosciences, Inc., has caused this Certificate of Designation of Preferences, Rights and Limitations of Series B Convertible Preferred Stock to be executed by its duly authorized officer this 14th day of January, 2020.

INTERPACE BIOSCIENCES, INC.

By: */s/ Jack E. Stover*
Name: Jack E. Stover
Title: President & Chief Executive Officer

[Signature Page to Certificate of Designation]

ANNEX A

NOTICE OF CONVERSION

(TO BE EXECUTED BY THE REGISTERED HOLDER
IN ORDER TO CONVERT SHARES OF SERIES B PREFERRED STOCK)

The undersigned Holder hereby irrevocably elects to convert the number of shares of Series B Preferred Stock indicated below, represented by stock certificate No(s)._____ (the "**Preferred Stock Certificates**"), into shares of common stock, par value $0.01 per share (the "**Common Stock**"), of Interpace Biosciences, Inc., a Delaware corporation (the "**Corporation**"), as of the date written below. If securities are to be issued in the name of a person other than the undersigned, the undersigned will pay all transfer taxes payable with respect thereto. Capitalized terms utilized but not defined herein shall have the meaning ascribed to such terms in that certain Certificate of Designation of Preferences, Rights and Limitations of Series B Convertible Preferred Stock (the "**Certificate of Designation**") filed by the Corporation with the Delaware Secretary of State on January 14, 2020.

Conversion calculations:

Date to Effect Conversion: _____

Number of shares of Series B Preferred Stock owned prior to Conversion: _____

Number of shares of Series B Preferred Stock to be Converted: _____

Number of shares of Common Stock to be Issued: _____

Address for delivery of physical certificates: _____

Or

for DWAC Delivery: _____

DWAC Instructions: _____

Broker no: _____

Account no: _____

HOLDER

By: _____
Name: _____
Title: _____
Date: _____

Exhibit 4.1

DESCRIPTION OF THE REGISTRANT'S SECURITIES
REGISTERED PURSUANT TO SECTION 12 OF THE
SECURITIES EXCHANGE ACT OF 1934

As of March 20, 2020, Interpace Biosciences, Inc. (the "Company", "we", "us" or "our") has one class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended, (the "Exchange Act") which consists of common stock, $0.01 par value per share. The following is a summary of information concerning our common stock and, to the extent applicable, the material limitations or qualifications on the rights of our common stock by our currently outstanding Series B convertible preferred stock, $0.01 par value per share ("Series B Preferred Stock"). The summary and description below does not purport to be a complete statement of the relevant provisions of our certificate of incorporation, as amended and including the Certificate of Designation (as defined below), and amended and restated bylaws, and are entirely qualified by these documents. The Delaware General Corporation Law may also affect the terms of these securities.

As of March 20, 2020, our authorized capital stock consists of 100,000,000 shares of common stock, par value $0.01 per share, of which 4,025,104 shares were issued and outstanding, held by approximately 147 stockholders of record and 5,000,000 shares of preferred stock, par value $0.01 per share, of which no shares of Series A convertible preferred stock, par value $0.01 per share, were issued and outstanding, no shares of Series A-1 convertible preferred stock, par value $0.01 per share, were issued and outstanding, and 47,000 shares of Series B Preferred Stock were issued and outstanding. The actual number of stockholders is greater than the number of stockholders of record and includes stockholders who are beneficial owners but whose shares are held in street name by brokers and other nominees. This number of holders of record also does not include stockholders whose shares may be held in trust by other entities. In addition, as of March 20, 2020, we had options to purchase 578,106 shares of common stock issued and outstanding. The authorized and unissued shares of common stock and preferred stock are available for issuance without further action by our stockholders, unless such action is required by applicable law or the rules of any stock exchange on which our securities may be listed. Unless approval of our stockholders is so required, our board of directors will not seek stockholder approval for the issuance and sale of our common stock.

Common Stock

Holders of our common stock are entitled to one vote for each share on all matters submitted to a vote of stockholders, and do not have cumulative voting rights. Generally, in matters other than the election of directors, the affirmative vote of a majority of the votes cast authorizes such an action, except where Delaware General Corporation Law prescribes a different percentage of votes or a different exercise of voting power. For the election of directors, directors are elected by a plurality of the votes of the shares present in person or represented by proxy and entitled to vote. Holders of our common stock are entitled to receive, as, when and if declared by our board of directors from time to time, such dividends and other distributions in cash, stock or property from our assets or funds legally available for such purposes, subject to any preferential dividend or other rights of any then outstanding preferred stock, including our Series B Preferred Stock described further herein.

No preemptive, conversion, or other subscription rights apply to our common stock. All outstanding shares of our common stock are fully paid and non-assessable. In the event of our liquidation, dissolution or winding up, holders of our common stock are entitled to share ratably in the assets available for distribution, subject to any preferential or other rights of any then outstanding preferred stock, including our Series B Preferred Stock described further herein. The voting, dividend and liquidation rights of the holders of our common stock are subject to and qualified by the rights of the holders of the preferred stock, including our Series B Preferred Stock described further herein.

Our common stock is listed on The Nasdaq Capital Market under the symbol "IDXG." The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC.

Anti-Takeover Effects of Provisions of Our Certificate of Incorporation, as Amended, Our Amended and Restated Bylaws and Delaware Law

Provisions of Delaware law and our certificate of incorporation, as amended, and amended and restated bylaws could make the following more difficult:

- the acquisition of us by means of a tender offer;
- the acquisition of us by means of a proxy contest or otherwise; or
- the removal of our incumbent officers and directors.

These provisions, summarized below, are expected to discourage certain types of coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe the benefits of increased protection of our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging such proposals because negotiation of such proposals could result in an improvement of their terms:

- *Classified Board of Directors*. Under our certificate of incorporation, as amended, our board of directors is divided into three classes of directors serving staggered three-year terms which means that the entire board of directors will not be up for election each year.

- *Stockholder meetings*. Under our certificate of incorporation, as amended, only our board of directors, the chairman of our board of directors and the chief executive officer (or the president if there is no chief executive officer) may call special meetings of stockholders.

- *Preferred stock*. Under our certificate of incorporation, as amended, we are authorized to issue 5,000,000 shares of preferred stock, which could make it more difficult for a third party to acquire voting control of our Company.

- *Requirements for advance notification of stockholder proposals and director nominations*. Our amended and restated bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as directors. These provisions may preclude stockholders from bringing matters before an annual meeting of stockholders or from making nominations for directors at an annual meeting of stockholders.

- *No action by written consent*. Under our certificate of incorporation, as amended, stockholders may only take action at an annual or special meeting of stockholders and may not act by written consent when our capital stock is registered under Section 12 of the Exchange Act or any similar successor statute.

- *Supermajority voting.* In order to amend certain provisions of our certificate of incorporation, as amended, including the prohibition on action by written consent of stockholders and the provision relating to calling of a special meeting of stockholders, the affirmative vote of holders of at least 75% of our outstanding capital stock is required.

- *No cumulative voting*. Our certificate of incorporation, as amended, does not provide for cumulative voting.

Anti-Takeover Effects of Delaware Law

Section 203 of the Delaware General Corporation Law ("Section 203") provides that, subject to exceptions specified therein, an "interested stockholder" of a Delaware corporation shall not engage in any "business combination," including general mergers or consolidations or acquisitions of additional shares of the corporation, with the corporation for a three-year period following the time that such stockholder becomes an interested stockholder unless:

- prior to such time, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;

- upon consummation of the transaction which resulted in the stockholder becoming an "interested stockholder," the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced (excluding specified shares); or

- on or subsequent to such time, the business combination is approved by the board of directors of the corporation and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock not owned by the interested stockholder.

Under Section 203, the restrictions described above also do not apply to specified business combinations proposed by an interested stockholder following the announcement or notification of one of specified transactions involving the corporation and a person who had not been an interested stockholder during the previous three years or who became an interested stockholder with the approval of a majority of the corporation's directors, if such transaction is approved or not opposed by a majority of the directors who were directors prior to any person becoming an interested stockholder during the previous three years or were recommended for election or elected to succeed such directors by a majority of such directors. The restrictions described above also do not apply to specified business combinations with a person who is an "interested stockholder" prior to the time when the corporation's common stock is listed on a national securities exchange, so these restrictions would not apply to a business combination with any person who is one of our stockholders prior to this offering.

Except as otherwise specified in Section 203, an "interested stockholder" is defined to include:

- any person that is the owner of 15% or more of the outstanding voting stock of the corporation, or is an affiliate or associate of the corporation and was the owner of 15% or more of the outstanding voting stock of the corporation at any time within three years immediately prior to the date of determination; and

- the affiliates and associates of any such person.

Under some circumstances, Section 203 makes it more difficult for a person who is an interested stockholder to effect various business combinations with us for a three-year period.

Limitation of Liability

Our certificate of incorporation, as amended, limits the liability of directors and officers to the fullest extent permitted by Delaware law and require that we indemnify our directors and officers to such extent, except that we will not be obligated to indemnify any such person for claims brought voluntarily and not by way of defense, or for any amounts paid in settlement of an action without our prior written consent.

In addition, our certificate of incorporation, as amended, provides that a director is not personally liable to us or our stockholders for monetary damages for breach of his or her fiduciary duty as director, except for liability (i) for any breach of the director's duty of loyalty to us or our stockholders; (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) for willful or negligent conduct in paying dividends or repurchasing stock out of any other lawfully available funds, or (iv) for any transaction from which the director derives an improper personal benefit.

Preferred Stock

We are authorized to issue up to five million shares of preferred stock, par value $.01 per share, in one or more series. Our board of directors has the authority, without action by our stockholders, to designate and issue preferred stock in one or more classes or one or more series of stock within any class and to designate the rights, preferences and privileges of each class or series, which may be greater than the rights of our common stock. It is not possible to state the actual effect of the issuance of any shares of preferred stock upon the rights of holders of our common stock until our board of directors determines the specific rights of the holders of such preferred stock. However, the effects might include, among other things:

- restricting dividends on the common stock;

- diluting the voting power of the common stock;

- impairing the liquidation rights of the common stock; or

- delaying or preventing a change in our control without further action by the stockholders.

Outstanding Preferred Stock

Our board of directors designated and issued 47,000 shares of Series B Preferred Stock, all of which are currently outstanding.

Ranking

The Series B Preferred Stock ranks senior to our common stock with respect to dividend rights and rights of liquidation (including mergers and consolidations and sales of all or substantially all of our assets), winding up, and dissolution.

Voting

On any matter presented to our stockholders for their action or consideration at any meeting of our stockholders (or by written consent of stockholders in lieu of meeting), each holder of outstanding shares of Series B Preferred Stock will be entitled to cast the number of votes equal to the number of whole shares of our common stock into which the shares of Series B Preferred Stock held by such holder are convertible as of the record date for determining stockholders entitled to vote on such matter. Except as provided by law or by the Certificate of Designation of Preferences, Rights and Limitations of Series B Convertible Preferred Stock (the "Certificate of Designation"), holders of Series B Preferred Stock will vote together with the holders of common stock as a single class and on an as-converted to common stock basis.

Director Designation Rights

The Certificate of Designation also provides the holders of Series B Preferred Stock with the following director designation rights: for so long such holder holds at least sixty percent (60%) of the Series B Preferred Stock issued to it on the Issuance Date (as defined therein), such holder will be entitled to elect two directors to the board of directors, provided that one of the directors qualifies as an "independent director" under Rule 5605(a)(2) of the listing rules of the Nasdaq Stock Market (or any successor rule or similar rule promulgated by another exchange on which our securities are then listed or designated). However, if at any time such holder holds less than sixty percent (60%), but at least forty percent (40%), of the Series B Preferred Stock issued to them on the Issuance Date, such holder would only be entitled to elect one director to the board of directors. Any director elected pursuant to the terms of the Certificate of Designation may be removed without cause by, and only by, the affirmative vote of the holders of Series B Preferred Stock. A vacancy in any directorship filled by the holders of Series B Preferred Stock may be filled only by vote or written consent in lieu of a meeting of such holders of Series B Preferred Stock or by any remaining director or directors elected by such holders of Series B Preferred Stock.

Conversion

The Certificate of Designation provides that from and after the Issuance Date and subject to the terms of the Certificate of Designation, each share of Series B Preferred Stock is convertible, at any time and from time to time, at the option of the holder into a number of shares of common stock equal to dividing the amount equal to the greater of the Stated Value (as defined therein) of such Series B Preferred Stock, plus any dividends declared but unpaid thereon, or such amount per share as would have been payable had each such share been converted into common stock immediately prior to a Liquidation (as defined below), by sixty cents ($0.60) (as adjusted to $6.00 following our effectuation of a one-for-ten (1:10) reverse stock split at 12:01a.m. Eastern Time on January 15, 2020 (the "Reverse Stock Split") and subject to further adjustment in the event of any stock dividend, stock split, combination, or other similar recapitalization affecting such shares). As of March 20, 2020, the aggregate number of shares of common stock that may be issued through conversion of all of the outstanding Series B Preferred Stock is 78,333,334 shares (as adjusted to 7,833,334 shares following effectuation of the Reverse Stock Split and subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares).

Mandatory Conversion

If we consummate the sale of shares of common stock to the public in a firm-commitment underwritten public offering pursuant to an effective registration statement under the Securities Act of 1933, as amended, pursuant to which the price of the common stock in such offering is at least equal to $1.20 (as adjusted to $12.00 following effectuation of the Reverse Stock Split and subject to further adjustment in the event of any stock dividend, stock split, combination, or other similar recapitalization affecting such shares) and such offering does not include warrants (or any other convertible security) and results in at least $25,000,000.00 in proceeds, net of the underwriting discount and commissions, to us, and our common stock continues to be listed for trading on the Nasdaq Capital Market or another exchange, all outstanding shares of Series B Preferred Stock will automatically be converted into shares of common stock, at the then effective Series B Conversion Ratio (as defined in the Certificate of Designation).

Dividends

The Certificate of Designation does not provide for mandatory dividends on the Series B Preferred Stock. Dividends may be declared and paid on the Series B Preferred Stock from funds lawfully available and as determined by our board of directors. We may not declare, pay or set aside any dividends on shares of any other class or series of capital stock (other than dividends on shares of common stock payable in shares of common stock) unless the holders of the Series B Preferred Stock then outstanding first receive, or simultaneously receive, a proportional dividend on each outstanding share of Series B Preferred Stock.

Protective Provisions

For so long as any shares of Series B Preferred Stock are outstanding, the written consent of the holders of at least seventy five percent (75%) of the then outstanding shares of Series B Preferred Stock (voting as a single class) is required for us to amend, waive, alter or repeal the preferences, rights, privileges or powers of the holders of the Series B Preferred Stock, amend, alter or repeal any provision of the Certificate of Designation in a manner adverse to the holders of the Series B Preferred Stock, authorize, create or issue any equity securities senior to or pari passu with the Series B Preferred Stock, or increase or decrease the number of directors constituting the board of directors.

For so long as thirty percent (30%) of the Series B Preferred Stock outstanding as of the Issuance Date remains outstanding (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization affecting such shares, including the Reverse Stock Split), the written consent of the holders representing at least seventy-five percent (75%) of the of the outstanding shares of Series B Preferred Stock (voting as a single class) is required for us to: (A) authorize, create or issue any debt securities for borrowed money or funded debt (1) pursuant to which we issue shares, warrants or any other convertible security, or (2) in excess of $4,500,000.00 initially, with such amount to be increased in connection with an aggregate consolidated revenue milestone, but excluding certain specified permitted transactions; (B) merge with or acquire all or substantially all of the assets of one or more other companies or entities with a value in excess of $20,000,000.00, to be increased in connection with an aggregate consolidated revenue milestone; (C) materially change the nature of our business; (D) consummate any Liquidation; (E) transfer material intellectual property rights other than in the ordinary course of business; (F) declare or pay any cash dividend or make any cash distribution on any of our equity interests other than the Series B Preferred Stock; (G) repurchase or redeem any shares of our capital stock, except for the redemption of the Series B Preferred Stock pursuant to the terms of the Certificate of Designation, or repurchases of common stock under agreements previously approved by the board of directors with employees, consultants, advisors or others who performed services for us in connection with the cessation of such employment or service; (H) incur any additional individual debt, indebtedness for borrowed money or other additional liabilities pursuant to which we issue shares, warrants or any other convertible security, or incur any individual debt, indebtedness for borrowed money or other liabilities pursuant to which we do not issue shares, warrants or any other convertible security exceeding $4,500,000.00 initially, with such amount to be increased in connection with an aggregate consolidated revenue milestone, but excluding certain specified permitted transactions; (I) change any of our accounting methods, except for those changes required by GAAP or applicable regulatory agencies or authorities; or (J) conduct a public offering of common stock registered with the Securities and Exchange Commission, including any at-the-market offering of our common stock.

Liquidation

Upon any voluntary or involuntary liquidation, dissolution or winding up of the Company or Deemed Liquidation (as defined in the Certificate of Designation) (each, a "Liquidation"), the holders of shares of Series B Preferred Stock then outstanding will be entitled to be paid out of our assets available for distribution to its stockholders (on a pari passu basis with the holders of any class or series of preferred stock ranking on liquidation on a parity with the Series B Preferred Stock), and before any payment will be made to the holders of common stock or any other class or series of preferred stock ranking on liquidation junior to the Series B Preferred Stock by reason of their ownership thereof, an amount per share of Series B Preferred Stock equal to the greater of (i) the Stated Value of such share of Series B Preferred Stock, plus any dividends declared but unpaid thereon, or (ii) such amount per share as would have been payable had each such share been converted into common stock immediately prior to such Liquidation.

Anti-Takeover Effects of our Certificate of Designation

Certain provisions of our Certificate of Designation could make it more difficult or expensive for a third party to acquire us. The Certificate of Designation prohibits us from engaging in certain transactions without the written consent or vote of the holders of a majority of the then outstanding shares of the Series B Preferred Stock. These and other provisions of the Series B Preferred Stock could prevent or deter a third party from acquiring us even where the acquisition could be beneficial to our holders of common stock.

Exhibit 4.9

LOAN AND SECURITY AGREEMENT

THIS LOAN AND SECURITY AGREEMENT (this "Agreement") dated as of November 13, 2018 (the **"Effective Date"),** by and among (a) **SILICON VALLEY BANK,** a California corporation **("Bank"),** and (b) (i) **INTERPACE DIAGNOSTICS GROUP, INC.,** a Delaware corporation **("IDG"),** (ii) **INTERPACE DIAGNOSTICS CORPORATION, a** Delaware corporation **("IDC"),** and (iii) **INTERPACE DIAGNOSTICS, LLC,** a Delaware limited liability company **("IDLLC")** (IDG, IDC and IDLLC are hereinafter jointly and severally, individually and collectively **"Borrower"),** provides the terms on which Bank shall lend to Borrower and Borrower shall repay Bank. 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. Notwithstanding the foregoing, all financial covenant and other financial calculations shall be computed with respect to Borrower only, and not on a consolidated basis. 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 shall 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 Term Loan.

(a) Availability. Subject to the terms and conditions of this Agreement, upon Borrower's request, during the Draw Period, Bank shall make term loan advances available to Borrower in an aggregate original principal amount of up to Eight Hundred Fifty Thousand Dollars ($850,000.00) (each such advance is referred to herein as a **"Term Loan Advance"** and, collectively, as the **"Term Loan Advances").** Borrower may not request more than two (2) Term Loan Advances hereunder. After repayment, no Term Loan Advance (or any portion thereof) may be reborrowed.

(b) Interest Payments. With respect to each Term Loan Advance, commencing on the first (1st) Payment Date for Term Loan Advances occurring in the month following the month in which the Funding Date of such Term Loan Advance occurs and continuing on each Payment Date thereafter until and on the Term Loan Maturity Date, Borrower shall make monthly payments of interest, in arrears, on the principal amount of such Term Loan Advance at the rate set forth in Section 2.5(a)(ii).

(c) Repayment. Commencing on June 3, 2019 and continuing on each Payment Date thereafter until and on the Term Loan Maturity Date, Borrower shall repay the Term Loan Advances in thirty-six(36) equal monthly installments of principal. All outstanding principal and accrued and unpaid interest under the Term Loan Advances, and all other outstanding Obligations with respect to the Term Loan Advances, are due and payable in full on the Term Loan Maturity Date.

(d) Permitted Prepayment. Borrower shall have the option to prepay all, but not less than all, of the Term Loan Advances, provided Borrower (i) delivers written notice to Bank of its election to prepay the Term Loan Advances at least ten (10) days prior to such prepayment, and (ii) pays, on the date of such prepayment (A) the outstanding principal plus accrued and unpaid interest with respect to the Term Loan Advances, (B) the Term Loan Prepayment Fee, (C) the Term Loan Final Payment and (D) all other sums, if any, that shall have become due and payable with respect to the Term Loan Advances, including interest at the Default Rate with respect to any past due amounts.

(e) Mandatory Prepayment Upon an Acceleration. If the Term Loan Advances are accelerated by Bank following the occurrence and during the continuance of an Event of Default, Borrower shall immediately pay to Bank an amount equal to the sum of (i) all outstanding principal plus accrued and unpaid interest with respect to the Term Loan Advances, (ii) the Term Loan Prepayment Fee, (iii) the Term Loan Final Payment and (iv) all other sums, if any, that shall have become due and payable with respect to the Term Loan Advances, including interest at the Default Rate with respect to any past due amounts.

(f) Mandatory Prepayment Based Upon Availability Amount. If, at any time when no Advance is outstanding, the Availability Amount is less than Zero Dollars ($0.00), Borrower shall immediately pay to Bank an amount equal to the sum of (i) all or such portion of the outstanding principal amount of the Term Loan Advances as is necessary so that, immediately after giving effect to such prepayment, the Availability Amount is equal to Zero Dollars ($0.00), and (ii) accrued and unpaid interest with respect to such principal amount of the Term Loan Advances prepaid under clause (i). For the sake of clarity, the Term Loan Prepayment Fee and the Term Loan Final Payment shall not apply to a prepayment with respect to the Term Loan Advances made solely under this Section 2.3(f). Any payments of principal with respect to the Term Loan Advances made under this Section 2.3(f) will be applied to the principal balance of the Term Loan Advances in the inverse order of maturity.

2.4 Overadvances. If, at any time, the sum of (a) the outstanding principal amount of any Advances, plus (b) the outstanding principal balance of all Term Loan 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").** Any payments made by Borrower pursuant to the immediately preceding sentence shall be first applied to outstanding principal amount of any Advances, with any remaining amount (if such additional amount is necessary to cure a continuing Overadvance after the principal amount of Advances has been paid in full) applied to the outstanding principal balance of all Term Loan Advances. 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 two percent (2.0%).

2.5 Payment of Interest on the Credit Extensions.

(a) Interest Rate.

(i) Advances. Subject to Section 2.5(b), the principal amount outstanding under the Revolving Line shall accrue interest at a floating per annum rate equal to one-half of one percent (0.50%) above the Prime Rate, which interest shall be payable monthly in arrears in accordance with Section 2.5(d) below.

(ii) Term Loan Advances. Subject to Section 2.5(b), the principal amount outstanding under the Term Loan Advances shall accrue interest at a floating per annum rate equal to the greater of (A) the Prime Rate and (B) five percent (5.0%), which interest shall be payable monthly in arrears in accordance with Section 2.5(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 two percent (2.0%) 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 2.5(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.

2.6 Fees. Borrower shall pay to Bank:

(a) Commitment Fee. A fully earned, non-refundable commitment fee of Ten Thousand Dollars ($10,000.00), on the Effective Date;

(b) Anniversary Fee. For each one (1) year anniversary of the Effective Date occurring prior to the Revolving Line Maturity Date, Borrower shall pay to Bank a fully earned, non-refundable anniversary fee of Ten Thousand Dollars ($10,000.00) (each, an **"Anniversary Fee"** and, collectively, the **"Anniversary Fees").** Each Anniversary Fee shall be fully earned on the Effective Date and shall be due and payable on the earliest to occur of (i) such one (1) year anniversary of the Effective Date, (ii) the occurrence of an Event of Default, and (iii) the termination of this Agreement;

(c) Termination Fee. Upon termination of this Agreement or the termination of the Revolving Line for any reason prior to the Revolving Line Maturity Date, in addition to the payment of any other amounts then-owing, a termination fee in an amount equal to (i) if the termination occurs on or prior to the first (1^{st}) anniversary of the Effective Date, three percent (3.0%) of the Revolving Line, (ii) if the termination occurs after the first (1^{st}) anniversary of the Effective Date but on or prior to the second (2^{nd}) anniversary of the Effective Date, two percent (2.0%) of the Revolving Line and (iii) if the termination occurs after the second (2^{nd}) anniversary of the Effective Date, one percent (1.0%) of the Revolving Line (the **"Termination Fee")**. Notwithstanding the foregoing, no termination fee shall be charged if the credit facility hereunder is replaced with a new facility from Bank;

(d) Unused Revolving Line Facility Fee. Payable monthly in arrears on the last day of each calendar month 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 thirty five-hundredths of one percent (0.35%) per annum of the average unused portion of the Revolving Line, as determined by Bank, computed on the basis of a year with the applicable number of days as set forth in Section 2.5(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 plus the outstanding principal balance of all Term Loan Advances, in each case tested as of the last day of the applicable calendar month;

(e) Term Loan Prepayment Fee. The Term Loan Prepayment Fee, when due hereunder;

(f) Term Loan Final Payment. The Term Loan Final Payment, when due hereunder;

(g) Bank Expenses. All Bank Expenses (including reasonable out-of-pocket and documented 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 2.6 pursuant to the terms of Section 2.7(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 2.6.

2.7 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 12:00 p.m. Eastern time on the date when due. Payments of principal and/or interest received after 12:00 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.

2.8 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 2.8 shall survive the termination of this Agreement.

3 <u>CONDITIONS OF LOANS</u>

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

(c) a secretary's corporate borrowing certificate of each of IDG and IDC with respect to such Borrower'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;

(d) a limited liability company borrowing certificate of IDLLC with respect to such Borrower'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) duly executed original signatures to the completed Borrowing Resolutions for each Borrower;

(f) 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;

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

(h) the completion of the Initial Audit;

(i) with respect to the initial Advance, a completed Borrowing Base Report (and any schedules related thereto and including any other information reasonably requested by Bank with respect to Borrower's Accounts); and

(j) payment of the fees and Bank Expenses then due as specified in Section 2.6 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 (i) with respect to requests for Advances, the Credit Extension request and any materials and documents required by Section 3.4 and (ii) with respect to requests for Term Loan Advances, an executed Payment/Advance Form 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/or the Payment/Advance Form, as applicable, 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.

(a) Advances. 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 (via an individual duly authorized by an Administrator) shall notify Bank (which notice shall be irrevocable) by electronic mail by 12:00 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 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, sales journals, cash receipts journals, accounts receivable aging reports, as Bank may request in its reasonable 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.

(b) Term Loan Advances. Subject to the prior satisfaction of all other applicable conditions to the making of a Term Loan Advance set forth in this Agreement, to obtain a Term Loan Advance, Borrower (via an individual duly authorized by an Administrator) shall notify Bank (which notice shall be irrevocable) by electronic mail by 12:00 p.m. Eastern time on the Funding Date of the Term Loan 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 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 Term Loan Advances. In connection with such notification, Borrower must promptly deliver to Bank by electronic mail or through Bank's online banking program a completed Payment/Advance Form executed by an Authorized Signer together with such other reports and information, as Bank may request in its reasonable discretion. Bank shall credit proceeds of any Term Loan Advance to the Designated Deposit Account. Bank may make Term Loan Advances under this Agreement based on instructions from an Authorized Signer or without instructions if the Term Loan 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 obligations 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 obligations 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, in each case 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 good faith 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 in all material respects (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 Secured Guarantor 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 and except for filings required to be made by Bank under applicable law in order to perfect Bank's security interest), 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 the best of Borrower's knowledge, no written claim has been made that any part of the Intellectual Property violates the rights of any third party except to the extent such written 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 Eligible Account Payor whose accounts are Eligible Accounts in any Borrowing Base Report. To the best of 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 disclosed 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, One Hundred Thousand Dollars ($100,000.00).

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 the best of 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 Five Thousand Dollars ($5,000.00).

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 Five Thousand Dollars ($5,000.00). 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 other 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 and such differences could be material).

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 each Secured Guarantor's 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 Secured Guarantor comply with all laws, ordinances and regulations to which it is subject, noncompliance with which could reasonably be expected to have a material adverse effect on Borrower's business.

(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) within thirty-five (35) days after the end of each month, a Borrowing Base Report (and any schedules related thereto and including any other information reasonably requested by Bank with respect to Borrower's Accounts);

(b) within thirty-five (35) days after the end of each month, (i) monthly accounts receivable agings, aged by invoice date, (ii) monthly accounts payable agings, aged by invoice date, and outstanding or held check registers, if any, and (iii) monthly reconciliations of accounts receivable agings (aged by invoice date), transaction reports and general ledger;

(c) within thirty-five (35) days after the end of each month, a management report in a form reasonably acceptable to Bank (which report shall, at a minimum, including details of Borrower's revenue, net profit and loss and cash balances);

(d) within thirty-five (35) days after the end of each month, a collections report in a form reasonably acceptable to Bank;

(e) as soon as available, but no later than forty-five (45) days after the last day of each calendar quarter (other than the fourth(4th) calendar quarter of each year), a company prepared consolidated balance sheet and income statement covering Borrower's consolidated operations for such month certified by a Responsible Officer and in a form reasonably acceptable to Bank;

(f) within thirty-five (35) days after the last day of each month, 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;

(g) as soon as available, but no later than thirty-five (35) days after the end 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;

(h) as soon as available, and in any event within ninety (90) days following the end of Borrower's fiscal year, 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;

(i) 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;

(j) within five (5) days of delivery, copies of all statements, reports and notices made available to Borrower's security holders or to any holders of Subordinated Debt;

(k) prompt written notice of any changes to the beneficial ownership information set out in Section 14 of the Perfection Certificate. Borrower understands and acknowledges that Bank relies on such true, accurate and up-to-date beneficial ownership information to meet Bank's regulatory obligations to obtain, verify and record information about the beneficial owners of its legal entity customers;

(l) prompt report of any legal actions pending or threatened in writing against Borrower or any Secured Guarantor that could reasonably be expected to result in damages or costs to Borrower or any Secured Guarantor of, individually or in the aggregate, One Hundred Thousand Dollars ($100,000.00) or more; and

(m) 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. 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 next Compliance Certificate 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 sum of (A) total outstanding Advances, plus (B) the outstanding principal balance of all Term Loan 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, including the Check Collections Lockbox, the **"Cash Collateral Account").** Notwithstanding the foregoing, with respect to payments on the Accounts made by check, at all times prior to the date that is one hundred twenty (120) days from the Effective Date, such payments may be collected in any account of Borrower maintained with Bank (provided that any such payments shall be immediately transferred to the Cash Collateral Account). On the date that is one hundred twenty (120) days from the Effective Date and at all times thereafter, Borrower must maintain a lockbox account with Bank for purposes of collecting payments by check (the **"Check Collections Lockbox")** and must direct all of its Account Debtors making payments by check to remit such payments to the Check Collections Lockbox. 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) when a Streamline Period is not in effect, applied to immediately reduce the Obligations under the Revolving Line (unless Bank, in its sole discretion, at times when an Event of Default exists, elects not to so apply such amounts), or (ii) when a Streamline Period is in effect, transferred on a daily basis to Borrower's operating account with Bank. 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, 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.

(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 five (5) Business Days 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 Twenty Five Thousand Dollars ($25,000.00) or less (for all such transactions in any fiscal year). Borrower agrees that it will hold such proceeds in the Cash Collateral Account 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 Secured Guarantor to timely file, all required tax returns and reports and timely pay, and require each Secured Guarantor to timely pay, all foreign, federal, state and local taxes, assessments, deposits and contributions owed by Borrower and each Secured Guarantor, 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, during normal business hours, to inspect the Collateral and the right to audit and copy Borrower's Books. The foregoing inspections and audits shall be conducted no more often than twice every twelve (12) months unless an Event of Default has occurred and is continuing in which case such inspections and audits shall occur as often as Bank shall determine is necessary. 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 eight (8) days in advance, and Borrower cancels or seeks to or reschedules the audit with less than eight (8) days written notice to Bank, then (without limiting any of Bank's rights or remedies) Borrower shall pay Bank a fee of Two Thousand Dollars ($2,000.00) plus any documented 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 the sole 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. Notwithstanding the foregoing, (i) so long as no Event of Default has occurred and is continuing, Borrower shall have the option of applying the proceeds of any casualty policy up to One Hundred Thousand Dollars ($100,000.00) in the aggregate for all losses under all casualty policies in any one year, toward the replacement or repair of destroyed or damaged property; provided that any such replaced or repaired property (A) shall be of equal or like value as the replaced or repaired Collateral and (B) shall be deemed Collateral in which Bank has been granted a first priority security interest, and (ii) after the occurrence and during the continuance of an Event of Default, all proceeds payable under such casualty policy shall, at the option of Bank, be 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 its and all of its Subsidiaries' operating and other deposit accounts, the Cash Collateral Account and securities/investment accounts with Bank and Bank's Affiliates. In addition to the foregoing, Borrower shall conduct all of its cash management and letters of credit banking with Bank and Bank's Affiliates. Any Guarantor shall maintain all depository, operating and securities/investment accounts with Bank and Bank's Affiliates.

(b) In addition to and without limiting the restrictions in (a), Borrower shall provide Bank five (5) 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 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 Covenant - Adjusted Quick Ratio. Maintain at all times, to be tested as of the last day of each month, an Adjusted Quick Ratio of at least 1.15 to 1.0.

6.10 Protection of Intellectual Property Rights.

(a) (i) Protect, defend and maintain the validity and enforceability of the Intellectual Property that is 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 unless the Board, in its good faith business judgment, determines it is in Borrower's best interests to do so.

(b) Provide written notice to Bank within thirty (30) 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 and its 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.

(a) 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).

(b) Comply with the terms of Bank's Online Banking Agreement as in effect from time to time and ensure that all persons utilizing Bank's online banking platform on behalf of Borrower are duly authorized to do so by an Administrator. Bank shall be entitled to assume the authenticity, accuracy and completeness on any information, instruction or request for a Credit Extension submitted via Bank's online banking platform and to further assume that any submissions or requests made via Bank's online banking platform have been duly authorized by an Administrator.

6.13 Formation or Acquisition of Subsidiaries. Notwithstanding and without limiting the negative covenants contained in Sections 7.3 and 7.7 hereof, at the time that Borrower or any Guarantor forms any direct or indirect Subsidiary or acquires any direct or indirect Subsidiary after the Effective Date, Borrower and such Guarantor shall, within sixty (60) days of Bank's request, (a) cause such new Subsidiary to provide to Bank a joinder to this Agreement to become a co-borrower hereunder or a Guaranty to become a Guarantor hereunder (as determined by Bank in its sole discretion), together with such appropriate financing statements and/or Control Agreements, all in form and substance satisfactory to Bank (including being sufficient to grant Bank a first priority Lien (subject to Permitted Liens) in and to the assets of such newly formed or acquired Subsidiary), (b) provide to Bank appropriate certificates and powers and financing statements, pledging all of the direct or beneficial ownership interest in such new Subsidiary, in form and substance satisfactory to Bank; and (c) provide to Bank all other documentation in form and substance satisfactory to Bank, including one or more opinions of counsel satisfactory to Bank, which in its opinion is appropriate with respect to the execution and delivery of the applicable documentation referred to above. Any document, agreement, or instrument executed or issued pursuant to this Section 6.13 shall be a Loan Document.

6.14 Post-Closing Requirements. Deliver to Bank, each in form and substance satisfactory to Bank, within forty-five (45) days of the Effective Date: (a) a certificate of good standing/foreign qualification for IDC from the Commonwealth of Massachusetts that is certified as of a date that is no more than thirty (30) days prior to the date on which it is delivered; (b) a landlord's consent in favor of Bank for each of (i) 300 Interpace Parkway, Parsippany, New Jersey, (ii) 2515 Liberty Avenue, Pittsburgh, Pennsylvania and (iii) 2 Church Street, New Haven, Connecticut, by the respective landlord thereof, together with the duly executed signatures thereto; and (c) 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 payee and/or additional insured clauses or endorsements in favor of Bank.

6.15 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.

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 Secured Guarantor 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; (c) of 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; (d) of Equipment simultaneously with the replacement of such Equipment with other Equipment that (i) is of equal or like value as the replaced Equipment and (ii) is Collateral in which Bank has been granted a first priority security interest; (e) consisting of Permitted Liens and Permitted Investments; (f) consisting of non-exclusive licenses for the use of the property of Borrower or its Subsidiaries in the ordinary course of business; (g) 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; (h) consisting of the abandonment, forfeiture or dedication to the public of Intellectual Property to the extent permitted pursuant to Section 6.10 (iii); (i) consisting of the forgiveness of debt owed by a Borrower or a Secured Guarantor to any other Borrower or Secured Guarantor; (j) of property between any Borrower and any Secured Guarantor; and (k) of other assets with an aggregate value not to exceed Two Hundred Fifty Thousand Dollars ($250,000.00) per fiscal year.

7.2 Changes in Business, Management, Control, or Business Locations. (a) Engage in or permit any Secured Guarantor to engage in any business other than the businesses currently engaged in by Borrower and such Secured Guarantor, as applicable, or reasonably related, incidental or ancillary thereto or a natural extension thereof; (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 fifteen (15) days after such Key Person's departure from Borrower; or (d) permit or suffer any Change in Control.

Borrower shall not, without at least ten (10) days prior written notice to Bank: (1) change its jurisdiction of organization, (2) change its organizational structure or type, (3) change its legal name, or (4) change any organizational number (if any) assigned by its jurisdiction of organization. Borrower shall provide written notice to Bank within five (5) Business Days after adding any new offices or business locations, including warehouses (unless such new offices or business locations contain less than One Hundred Thousand Dollars ($100,000.00) in Borrower's assets or property) or delivering any portion of the Collateral valued, individually or in the aggregate, in excess of One Hundred Thousand Dollars ($100,000.00) to a bailee at a location other than to a bailee and at a location already disclosed in the Perfection Certificate. If Borrower intends to add any new offices or business locations, including warehouses, containing in excess of One Hundred Thousand Dollars ($100,000.00) of Borrower's assets or property, then Borrower will first cause the landlord of any such new offices or business locations, including warehouses, to execute and deliver a landlord consent in form and substance reasonably satisfactory to Bank. If Borrower intends to deliver any portion of the Collateral valued, individually or in the aggregate, in excess of One Hundred Thousand Dollars ($100,000.00) 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 cause such bailee to 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 Secured Guarantor to merge or consolidate, with any other Person, or acquire, or permit any Secured Guarantor to acquire, all or substantially all of the capital stock, membership interests or property of another Person (including, without limitation, by the formation of any Foreign Subsidiary) except for Permitted Acquisitions. A Borrower may merge or consolidate into another Borrower, a Secured Guarantor may merge or consolidate into a Borrower or another Secured Guarantor and a Subsidiary that is not a Borrower or Secured Guarantor may merge or consolidate into another Subsidiary or into a Borrower or a Secured Guarantor.

7.4 Indebtedness. Create, incur, assume, or be liable for any Indebtedness, or permit any Secured Guarantor 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 Secured Guarantor to do so, except for Permitted Liens, permit any Collateral not to be subject to the first priority security interest 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),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 Secured Guarantor from assigning, mortgaging, pledging, granting a security interest in or upon, or encumbering any of Borrower's or any Secured Guarantor'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 on or redeem, retire or purchase any capital stock, provided that (i) Borrower may pay dividends solely in common stock,
(ii) Borrower may make purchases of capital stock in connection with the exercise of stock options or stock appreciation by way of a cashless exercise, (iii) Borrower may repurchase the stock of former employees or consultants pursuant to stock repurchase agreements so long as an Event of Default does not exist at the time of any such repurchase and would not exist after giving effect to any such repurchase, provided that the aggregate amount of all such repurchases does not exceed One Hundred Thousand Dollars ($100,000.00) per fiscal year and (iv) Subsidiaries of Borrower may pay dividends or make any distribution or payment to Borrower and any Borrower or Secured Guarantor may pay dividends or make any distribution or payment to any other Borrower or Secured Guarantor; or (b) directly or indirectly make any Investment (including, without limitation, by the formation of any Foreign Subsidiary) other than Permitted Investments, or permit any Secured Guarantor to do so.

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 any Subordinated Debt which would provide for earlier or greater principal, interest, or other payments thereon (unless otherwise expressly permitted pursuant to the terms of the subordination agreement or intercreditor agreement between Bank and the relevant creditor), or adversely affect the subordination thereof to Obligations owed to Bank. For clarity, nothing in this covenant shall prohibit the incurrence or increase in the principal amount of any Subordinated Debt.

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 (a) meet the minimum funding requirements of ERISA, (b) prevent a Reportable Event or Prohibited Transaction, as defined in ERISA, to occur, or (c) comply with the Federal Fair Labor Standards Act or violate any other law or regulation, the failure of any of the conditions described in clauses (a) through (c) which could reasonably be expected to have a material adverse effect on Borrower's business, or permit any Secured Guarantor to do so; withdraw or permit any Secured Guarantor 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 or the Term Loan 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.

(a) Borrower fails or neglects to perform any obligation in Sections 6.2, 6.3(c), 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.12, 6.13 or 6.14 or violates any covenant in Section 7; or

(b) Borrower 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 this Section 8) 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 thirty (30) 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). Cure periods provided under this section shall not apply, among other things, to financial covenants or any other covenants set forth in clause (a) above;

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) in excess of Fifty Thousand Dollars ($50,000.00), 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 Secured Guarantor is unable to pay its debts (including trade debts) as they become due or otherwise becomes insolvent; (b) Borrower or any Secured Guarantor begins an Insolvency Proceeding; or (c) an Insolvency Proceeding is begun against Borrower or any Secured Guarantor 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 a right by such third party or parties, whether or not exercised, to accelerate 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 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 thirty (30) 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 subordination agreement, intercreditor agreement or other document, instrument, or agreement evidencing the subordination of 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; or

8.10 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 Secured Guarantor 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 Secured Guarantor to hold any Governmental Approval in any other jurisdiction.

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 Loan Document;

(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 9.1, 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;

(i) 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, exercisable following the occurrence of an Event of Default, to: (a) endorse Borrower's name on any checks, payment instruments, or other forms of payment or security; (b) sign Borrower's name on any invoice or bill of lading for any Account or drafts against Account Debtors; (c) 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); (d) make, settle, and adjust all claims under Borrower's insurance policies; (e) 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; and (f) transfer the Collateral into the name of Bank or a third party as the Code permits. 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 (or at any time on the terms set forth in Section 6.3(c), regardless of whether an Event of Default exists), 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. Each Borrower may, acting singly, request Credit Extensions hereunder. Each Borrower hereby appoints each 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 Credit Extension, 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: Interpace Diagnostics Group, Inc.
Interpace Diagnostics Corporation
Interpace Diagnostics, LLC
Morris Corporate Center I, Building C
300 Interpace Parkway
Parsippany, New Jersey 07054
Attn: Jack Stover
Fax: (973) 265-0191
Email: jstover@interpacedx.com

with a copy to: Pepper Hamilton LLP
The New York Times Building, 37th Floor
620 Eighth Avenue
New York, NY 10018-1405
Attn: Merrill M. Kraines, Esquire
Fax: (212) 286-9806
Email: krainesm@pepperlaw.com

If to Bank: Silicon Valley Bank
275 Grove Street, Suite 2-200
Newton, Massachusetts 02466
Attn: Mr. Michael McMahon
Fax: (617) 527-0177
Email: MMcMahon@svb.com

with a copy to: Riemer & Braunstein LLP
One 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, Massachusetts 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 Boston, Massachusetts; 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.

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 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 and the Term Loan 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 pursuant to the Loan Documents (including reasonable and documented out-of-pocket 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 so long as Bank provides Borrower 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 Bank and Borrower.

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 the subject matter thereof 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 use 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 (t) 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 anonymous forms of confidential information for aggregate datasets, for analyses or reporting, and for any other uses not expressly prohibited in writing 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.

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, as to any Person, any **"account"** of such Person as "account" is 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 such Person.

"Account Debtor" is any **"account debtor"** as defined in the Code with such additions to such term as may hereafter be made.

"Adjusted Quick Ratio" is the ratio of (a) Quick Assets to (b) (i) Current Liabilities, minus (ii) the current portion of Deferred Revenue, minus (iii) to the extent the same are included in Current Liabilities, (A) the amount of any liabilities from discontinued operations as reported in Borrower's financial statements filed with the SEC, (B) the amount of any sales and use tax liability, (C) the amount of any unclaimed property as reported in Borrower's financial statements filed with the SEC and (D) the amount of any contingent consideration as reported in Borrower's financial statements filed with the SEC.

"Administrator" is an individual that is named:

(a) as an "Administrator" in the "SVB Online Services" form completed by Borrower with the authority to determine who will be authorized to use SVB Online Services (as defined in Bank's Online Banking Agreement as in effect from time to time) on behalf of Borrower; and

(b) as an Authorized Signer of Borrower in an approval by the Board.

"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. For purposes of the definition of Eligible Accounts, Affiliate shall include a Specified Affiliate.

"Agreement" is defined in the preamble hereof.

"Anniversary Fee" and **"Anniversary Fees"** are each defined in Section 2.6(b).

"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, minus (c) the outstanding principal balance of all Term Loan Advances.

"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.

"Board" is Borrower's board of directors (or the limited liability company equivalent thereof).

"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 eighty percent (80.0%) of Net Collectable Value, as determined by Bank from Borrower's most recent Borrowing Base Report (and as may subsequently be updated by Bank 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 percentage 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 Base Report" is that certain report of the value of certain Collateral in the form specified by Bank to Borrower from time to time.

"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 members) 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 other authorized officer) 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.; (c) Bank's certificates of deposit issued maturing no more than one (1) year after issue; 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.

"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 twenty-five percent (25.0%) 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 Permitted Liens) except for Subsidiaries acquired as part of or resulting from joint ventures permitted pursuant to subsection (j) of the definition of Permitted Investments.

"Check Collections Lockbox" is defined in Section 6.3(c).

"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 Commonwealth of Massachusetts; 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 Commonwealth of Massachusetts, 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 Term Loan Advance, any Overadvance, or any other extension of credit by Bank for Borrower's benefit.

"Currency" is coined money and such other banknotes or other paper money as are authorized by law and circulate as a medium of exchange.

"Current Liabilities" are (a) all obligations and liabilities of Borrower to Bank (other than any Obligations related to Term Loan Advances), plus (b) without duplication of (a), the aggregate amount of Borrower's Total Liabilities that mature within one (1) year (other than any Obligations related to Term Loan Advances).

"**Default Rate**" is defined in Section 2.5(b).

"Deferred Revenue" is all amounts received or invoiced in advance of performance under contracts and not yet recognized as revenue.

"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 the account number ending 153 (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.

"Domestic Subsidiary" means a Subsidiary organized under the laws of the United States or any state or territory thereof or the District of Columbia.

"Draw Period" is the period of time commencing on the Effective Date through the earlier to occur of (a) March 31, 2019 and (b) the occurrence of an Event of Default.

"Effective Date" is defined in the preamble hereof.

"Eligible Accounts" means Accounts owing to Borrower 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 Eligible Account Payors deemed creditworthy by Bank in its good faith business judgment. Bank reserves the right at any time after the Effective Date to adjust any of the criteria set forth below and to establish new criteria in its good faith business judgment. Unless Bank otherwise agrees in writing, Eligible Accounts shall not include:

(a) Accounts (i) for which the Eligible Account Payor is Borrower's Affiliate, officer, employee, investor, or agent, or (ii) that are intercompany Accounts;

(b) Accounts that the Eligible Account Payor has not paid within one hundred twenty (120) days of invoice date regardless of invoice payment period terms;

ounts with credit balances over one hundred twenty (120) days from invoice date;

(d) Accounts owing from an Eligible Account Payor if fifty percent (50%) or more of the Accounts then owing from such Eligible Account Payor have not been paid within one hundred twenty (120) days of invoice date;

(e) Accounts owing from an Eligible Account Payor (i) which does not have its principal place of business in the United States or (ii) whose billing address (as set forth in the applicable invoice for such Account) is not in the United States, unless in the case of both (i) and (ii) such Accounts are otherwise approved by Bank in writing on a case by case basis in its sole discretion;

(f) Accounts billed from and/or payable to Borrower outside of the United States (sometimes called foreign invoiced accounts);

(g) Accounts in which Bank does not have a first priority, perfected security interest under all applicable laws;

(h) Accounts billed and/or payable in a Currency other than Dollars;

(i) Accounts owing from an Eligible Account Payor to the extent that Borrower is indebted or obligated in any manner to the Eligible Account Payor (as creditor, lessor, supplier or otherwise - sometimes called "contra" accounts, accounts payable, customer deposits or credit accounts);

(j) Accounts with or in respect of accruals for marketing allowances, incentive rebates, price protection, cooperative advertising and other similar marketing credits, unless otherwise approved by Bank in writing;

(k) Accounts owing from an Eligible Account Payor 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;

(l) Accounts with customer deposits and/or with respect to which Borrower has received an upfront payment, to the extent of such customer deposit and/or upfront payment;

(m) 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 Eligible Account Payor's payment may be conditional;

(n) Accounts owing from an Eligible Account Payor where goods or services have not yet been rendered to the Eligible Account Payor (sometimes called memo billings or pre-billings);

(o) Accounts subject to contractual arrangements between Borrower and an Eligible Account Payor 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);

(p) Accounts owing from an Eligible Account Payor the amount of which may be subject to withholding based on the Eligible Account Payor's satisfaction of Borrower's complete performance (but only to the extent of the amount withheld; sometimes called retainage billings);

(q) Accounts subject to trust provisions, subrogation rights of a bonding company, or a statutory trust;

(r) Accounts owing from an Eligible Account Payor that has been invoiced for goods that have not been shipped to the Eligible Account Payor unless Bank, Borrower, and the Eligible Account Payor have entered into an agreement acceptable to Bank wherein the Eligible Account Payor 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);

(s) Accounts for which the Eligible Account Payor has not been invoiced;

(t) Accounts that represent non-trade receivables or that are derived by means other than in the ordinary course of Borrower's business;

(u) Accounts for which Borrower has permitted Eligible Account Payor'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);

(v) Accounts arising from chargebacks, debit memos or other payment deductions taken by an Eligible Account Payor;

(w) Accounts arising from product returns and/or exchanges (sometimes called "warranty" or **"RMA"** accounts);

(x) Accounts in which the Eligible Account Payor disputes liability or makes any claim (but only up to the disputed or claimed amount), or if the Eligible Account Payor is subject to an Insolvency Proceeding (whether voluntary or involuntary), or becomes insolvent, or goes out of business;

(y) Accounts owing from an Eligible Account Payor with respect to which Borrower has received Deferred Revenue (but only to the extent of such Deferred Revenue);

(z) Accounts owing from an Eligible Account Payor, whose total obligations to Borrower exceed twenty-five percent (25.0%) of all Accounts, for the amounts that exceed that percentage, unless otherwise approved by Bank in writing on a case-by-case basis in its sole discretion;

(aa) Accounts owing from an individual; and

(bb) 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 Account Payor" are Account Debtors or third party payors.

"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 any Subsidiary which is not a Domestic Subsidiary.

"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.

"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.

"IDC" is defined in the preamble hereof.

"IDG" is defined in the preamble hereof.

"IDLLC" is defined in the preamble hereof.

"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 reasonably 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.

"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.

"Key Person" is Borrower's Chief Executive Officer.

"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.

"Loan Documents" are, collectively, this Agreement and any schedules, exhibits, certificates, notices, and any other documents related to this Agreement, the Perfection Certificate, any Control 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, 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; or (c) a material impairment of the prospect of repayment of any portion of the Obligations.

"Net Collectable Value" is the value of Borrower's unpaid Eligible Accounts, minus bad debt allowances, contra allowances and other standard ineligibles, as determined by Bank in its sole discretion.

"Obligations" are Borrower's obligations to pay when due any debts, principal, interest, fees, the Anniversary Fees, the Unused Revolving Line Facility Fee, the Termination Fee, the Term Loan Prepayment Fee, the Term Loan Final Payment, Bank Expenses, and other amounts Borrower owes Bank now or later, whether under this Agreement or the other Loan Documents, including, without limitation, all obligations relating to Bank Services and 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 2.4.

"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/Advance Form" is that certain form in the form attached hereto as Exhibit C.

"Payment Date" is (a) with respect to Term Loan Advances, the first (1st) Business Day of each month and (b) with respect to Advances, the last Business Day of each month.

"Perfection Certificate" is defined in Section 5.1.

"Permitted Acquisition" means a transaction whereby Borrower acquires, or permits any Secured Guarantor to acquire, all or substantially all of the capital stock or property of another Person, which satisfies each of the following conditions:

(a) such transaction shall only involve assets located in the United States and the party or parties being acquired is in the same or a substantially similar line of business as Borrower;

(b) the acquisition costs (including the purchase price) expended by Borrower in the transaction are not paid with any Credit Extensions made hereunder;

(c) no Event of Default has occurred and is continuing or would exist after giving effect to the transaction and Bank has received satisfactory evidence that Borrower is in compliance with all terms and conditions of this Agreement (and that it will be in compliance after giving effect to the transaction);

(d) the acquisition is approved by the board of directors (or equivalent control group) of all parties to the transaction;

(e) the total aggregate cash consideration to be paid by Borrower and its Subsidiaries in connection therewith in all of the contemplated transactions in any fiscal year does not exceed Two Million Dollars ($2,000,000.00) minus the amount of Investments made in such fiscal year in connection with joint ventures and strategic alliances pursuant to subsection (j) of the definition of Permitted Investments; provided, however, that Borrower may pay as consideration any proceeds from the sale of IDG's equity securities or any Subordinated Debt financing of IDG, in either case only to the extent such sale of equity securities or Subordinated Debt financing is conducted specifically for the purpose of funding an acquisition and so long as the proceeds are received by IDG no more than five (5) Business Days prior to the closing of the relevant acquisition;

(f) Borrower provides Bank (i) written notice of the transaction at least thirty (30) days before the closing of the transaction, and (ii) copies of the acquisition agreement and other material documents relative to the contemplated transaction and such other financial information, financial analysis, documentation or other information relating to such transaction as Bank shall reasonably request at least thirty (30) days before the closing of the transaction;

(g) Borrower provides Bank, at least thirty (30) days before the closing of the contemplated transaction, written confirmation, supported by reasonably detailed calculations, that on a pro forma basis (after giving effect to such transaction) Borrower is projected to be in compliance with each of the financial covenants in Section 6.9 as of the closing date of such contemplated transaction;

(h) Borrower is a surviving legal entity after completion of the contemplated transaction;

(i) the contemplated transaction is consensual and non-hostile;

(j) no Indebtedness will be incurred, assumed, or would exist with respect to Borrower or any Secured Guarantor as a result of the contemplated transaction, other than Permitted Indebtedness, and no Liens will be incurred, assumed, or would exist with respect to the assets of Borrower or any Secured Guarantor as a result of the contemplated transaction, other than Permitted Liens;

(k) the acquisition and the company being acquired is accretive in all respects;

(l) any Person whose capital stock is acquired or any Subsidiary that acquires assets in such contemplated transaction shall, within thirty (30) days of the consummation of the transaction, become a co-borrower or guarantor (as determined by Bank in its sole discretion) hereunder and shall grant a first priority Lien in all of its assets to Bank, all on documentation acceptable to Bank in its sole discretion; and

(m) Borrower shall have delivered to the Bank, at least five (5) Business Days prior to the date on which any such acquisition is to be consummated (or such later date as is agreed by Bank in its sole discretion), a certificate of a Responsible Officer of Borrower, in form and substance reasonably satisfactory to Bank, certifying that all of the requirements set forth in this definition have been satisfied or will be satisfied on or prior to the consummation of such purchase or other acquisition.

"Permitted Indebtedness" is:

(a) Borrower's and/or any Guarantor'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) Contingent Obligations of any Borrower or Secured Guarantor with respect to obligations of any other Borrower or Secured Guarantor (provided that the primary obligations are not prohibited hereby) and Contingent Obligations of any Subsidiary with respect to obligations of any Borrower, Secured Guarantor or any other Subsidiary (provided that the primary obligations are not prohibited hereby);

(h) Indebtedness of a Borrower or Secured Guarantor to any other Borrower or Secured Guarantor;

(i) unsecured Indebtedness in respect of earn-out, deferred purchase price and other similar unsecured contingent obligations in connection with Permitted Acquisitions so long as the aggregate amount of all such Indebtedness, when taken together with the aggregate consideration paid or payable for such Permitted Acquisitions during the term of this Agreement, does not exceed the amount permitted in subsection (e) of the definition of Permitted Acquisition;

(j) unsecured Indebtedness consisting of obligations in connection with deferred compensation not exceeding Two Hundred Fifty Thousand Dollars ($250,000.00) in the aggregate outstanding at any time;

(k) other unsecured Indebtedness not otherwise permitted by Section 7.4 not exceeding Two Hundred Fifty Thousand Dollars ($250,000.00) in the aggregate outstanding at any time; and

(l) extensions, refinancings, modifications, amendments and restatements of any items of Permitted Indebtedness (a) through (d) 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 consisting of notes receivable of, or prepaid royalties and other credit extensions, to customers and suppliers who are not Affiliates, in the ordinary course of business; provided that this paragraph (c) shall not apply to Investments of Borrower in any Subsidiary;

(d) Investments (i) by Borrower in Subsidiaries for the ordinary and necessary current operating expenses of such Subsidiaries not to exceed Two Hundred Fifty Thousand Dollars ($250,000.00) in the aggregate in any fiscal year and (ii) by a Borrower or a Secured Guarantor in any other Borrower or Secured Guarantor;

(e) Investments consisting of (i) travel advances and employee relocation loans and other employee loans and advances in the ordinary course of business, and (ii) loans to employees, officers or directors relating to the purchase of equity securities of Borrower or any Secured Guarantor pursuant to employee stock purchase plans or agreements approved by the Board;

(f) Investments consisting of Permitted Acquisitions;

(g) Investments consisting of deposit accounts (but only to the extent that Borrower is permitted to maintain such accounts pursuant to Section 6.8 of this Agreement) in which Bank has a first priority perfected security interest;

(h) Investments accepted in connection with Transfers permitted by Section 7.1;

(i) Investments (including debt obligations) received in connection with the bankruptcy or reorganization of customers or suppliers and in settlement of delinquent obligations of, and other disputes with, customers or suppliers arising in the ordinary course of business;

(i) joint ventures or strategic alliances in the ordinary course of Borrower's business consisting of the non-exclusive licensing of technology, the development of technology or the providing of technical support, provided that any cash investments by Borrower do not exceed in the aggregate in any fiscal year Two Million Dollars ($2,000,000.00) minus the amount of cash consideration paid by Borrower in connection with any Permitted Acquisition in such fiscal year; provided, however, that Borrower may invest in such joint ventures or strategic alliances any proceeds from the sale of IDG's equity securities or any Subordinated Debt financing of IDG, in either case only to the extent such sale of equity securities or Subordinated Debt financing is conducted specifically for the purpose of funding such investment and so long as the proceeds are received by IDG no more than five (5) Business Days prior to Borrower making such investment;

(k) formation of any Domestic Subsidiary so long as no cash or other assets of Borrower is transferred in connection therewith; and

(1) other Investments not otherwise permitted by Section 7.7 not exceeding Fifty Thousand Dollars ($50,000.00) in the aggregate outstanding at any time.

"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 Two Hundred Fifty Thousand Dollars ($250,000.00) 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 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 One Hundred Thousand Dollars ($100,000.00) 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;

(e) 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);

(f) easements, reservations, rights-of-way, restrictions, minor defects or irregularities in title and other similar charges or encumbrances affecting real property not likely to have a material adverse effect on Borrower's business;

(g) Liens arising from attachments or judgments, orders, or decrees in circumstances not constituting an Event of Default under Sections 8.4 and 8.7;

(h) leases or subleases of real property granted in the ordinary course of Borrower's business (or, if referring to another Person, in the ordinary course of such Person's business), and leases, subleases, non exclusive licenses or sublicenses of personal property (other than Intellectual Property) granted in the ordinary course of Borrower's business (or, if referring to another Person, in the ordinary course of such Person's business), if the leases, subleases, licenses and sublicenses do not prohibit granting Bank a security interest therein;

(i) Liens in favor of customs and revenue authorities arising as a matter of law to secure payments of custom duties in connection with the importation of goods;

(j) deposits to secure the performance of bids, trade contracts (other than for borrowed money), leases, statutory obligations, surety and appeal bonds, performance bonds and other obligations of a like nature incurred in the ordinary course of business (other than for indebtedness or any Liens arising under ERISA);

(k) Liens on any cash earnest money deposits made by Borrower in an aggregate amount not to exceed Fifty Thousand Dollars ($50,000.00) at any time in connection with any Permitted Acquisition or other acquisition of property not prohibited hereunder;

(l) Liens in favor of other financial institutions arising in connection with Borrower's deposit and/or securities accounts held at such institutions, provided that (i) Bank has a first priority perfected security interest in the amounts held in such deposit and/or securities accounts (ii) such accounts are permitted to be maintained pursuant to Section 6.8 of this Agreement; and

(m) Liens incurred in the extension, renewal or refinancing of the Indebtedness secured by Liens described in (a) through (l),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.

"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 maintained with Bank and net billed accounts receivable determined according to GAAP.

"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, President, Chief Financial Officer and Controller 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 Four Million Dollars ($4,000,000.00).

"Revolving Line Maturity Date" is the date that is three (3) years from the Effective Date.

"SEC" shall mean the Securities and Exchange Commission, any successor thereto, and any analogous Governmental Authority.

"Secured Guarantor" is any Guarantor with respect to which Bank has a first priority security interest (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) in all of such Guarantor's personal property.

"Securities Account" is any **"securities account"** as defined in the Code with such additions to such term as may hereafter be made.

"Specified Affiliate" is any Person (a) more than ten percent (10.0%) of whose aggregate issued and outstanding equity or ownership securities or interests, voting, non-voting or both, are owned or held directly or indirectly, beneficially or of record, by Borrower, and/or (b) whose equity or ownership securities or interests representing more than ten percent (10.0%) of such Person's total outstanding combined voting power are owned or held directly or indirectly, beneficially or of record, by Borrower.

"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 at all times during the immediately preceding calendar month maintained an Adjusted Quick Ratio, as determined by Bank in its reasonable discretion, of greater than 1.25 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, as determined by Bank in its reasonable 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 reasonable 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 reasonable 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.

"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.

"Term Loan Advance" and **"Term Loan Advances"** are each defined in Section 2.3 of this Agreement.

"Term Loan Final Payment" is, with respect to the Term Loan Advances, a payment (in addition to and not a substitution for the regular monthly payments of principal plus accrued interest) in an amount equal to five percent (5.0%) of the original principal amount of all Term Loan Advances made by Bank due on the earliest to occur of (a) the Term Loan Maturity Date, (b) the payment in full of the Term Loan Advances, (c) as required pursuant to Section 2.3(d) or 2.3(e), or (d) the termination of this Agreement.

"Term Loan Maturity Date" is May 2, 2022.

"Term Loan Prepayment Fee" shall be an additional fee, payable to Bank, with respect to the Term Loan Advances, in an amount equal to (a) on or prior to the first (1st) anniversary of the Effective Date, an additional fee payable to Bank in an amount equal to three percent (3.0%) of the original principal amount of the Term Loan Advances, (b) after the first (1st) anniversary of the Effective Date but on or prior to the second (2nd) anniversary of the Effective Date, an additional fee payable to Bank in an amount equal two percent (2.0%) of the original principal amount of the Term Loan Advances and (c) after the second (2nd) anniversary of the Effective Date, an additional fee payable to Bank in an amount equal to one percent (1.0%) of the original principal amount of the Term Loan Advances. Notwithstanding the foregoing, Bank agrees to waive the Term Loan Prepayment Fee if the Term Loan Advances are prepaid in full in accordance with Section 2.3(d) in connection and simultaneously with the refinancing of the Term Loan Advances by Bank in Bank's sole and absolute discretion.

"Termination Fee" is defined in Section 2.6(c).

"Total Liabilities" is on any day, obligations that should, under GAAP, be classified as liabilities on Borrower's consolidated balance sheet, including all Indebtedness. For purposes of this definition, any obligations of a Person under a lease (whether existing now or entered into in the future) that is not (or would not be) a capital lease obligation under GAAP as in effect as of the date of this Agreement shall not be treated as a capital lease obligation solely as a result of the adoption of changes in GAAP.

"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.

"Unused Revolving Line Facility Fee" is defined in Section 2.6(d).

[Signature page follows.]

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as a sealed instrument under the laws of the Commonwealth of Massachusetts as of the Effective Date.

BORROWER:

INTERPACE DIAGNOSTICS GROUP, INC.

By *[/s/ Jack E. Stover]*

Name: Jack E. Stover

Title: President & CEO

INTERPACE DIAGNOSTICS CORPORATION

By *[/s/ Jack E. Stover]*

Name: Jack E. Stover

Title: President & CEO

INTERPACE DIAGNOSTICS LLC

By *[/s/ Jack E. Stover]*

Name: Jack E. Stover

Title: President & CEO

BANK:

SILICON VALLY BANK

By *[/s/ Michael McMuhan]*

Name: Michael McMuhan

Title: Director

EXHIBIT A - COLLATERAL DESCRIPTION

[Intentionally omitted.]

EXHIBIT B COMPLIANCE CERTIFICATE

[Intentionally omitted.]

EXHIBIT C

LOAN PAYMENT/ADVANCE REQUEST FORM

[Intentionally omitted.]

Exhibit 10.34

AMENDMENT NO. 8 TO LEASE

THIS AMENDMENT NO. 8 TO LEASE (this "Amendment") is made and entered into as of the 31 day of December, 2019 by and between Landlord and Tenant named below:

LANDLORD: WE 2 Church Street South LLC
c/o Winstanley Enterprises LLC
150 Baker Avenue Extension, Suite 303
Concord, Massachusetts 01742

TENANT: Interpace Diagnostics Lab Inc.
2 Church Street South
New Haven, Connecticut 06519

BUILDING: 2 Church Street South
New Haven, CT 06519

WHEREAS, Landlord and Tenant's predecessor in interest, JS Genetics, LLC ("Original Tenant"), executed a lease dated as of June 28, 2006 (as previously amended, and as further amended herein, the "Lease"), by which Tenant leased approximately 429 rentable square feet of the Building known as Suite B-05B; and

WHEREAS, the Lease was subsequently amended by Amendment No. 1 to Lease dated as of September 18, 2007, by which the term of the Lease was extended and Tenant leased an additional 938 rentable square feet of space known as Suite B-5, making the aggregate rentable square footage of the Premises 1,367 rentable square feet (as modified below, the "Premises"); and

WHEREAS, the Lease was subsequently amended by Amendment No. 2 to Lease dated as of August 29, 2008, by which the Basic Rent was increased and the term of the Lease was extended; and

WHEREAS, the Lease was subsequently amended by Amendment No. 3 to Lease dated as of April 8, 2009, by which the term of the Lease was extended; and

WHEREAS, the Lease was subsequently amended by Amendment No. 4 to Lease dated as of September 16, 2010, by which the term of the Lease was extended and a Termination Clause was added to the Lease; and

WHEREAS, the Lease was subsequently amended by Amendment No. 5 to Lease dated as of September 15, 2011, by which the term of the Lease was extended; and

WHEREAS, the Lease was subsequently amended by Amendment No. 6 to Lease dated as of March 5, 2014, by which the Basic Rent was increased and the term of the Lease was extended; and

WHEREAS, the Lease was subsequently amended by Amendment No. 7 to Lease dated as of August 29, 2014, by which the term of the Lease was extended; and

WHEREAS, Landlord and JS Genetics, Inc. entered into a Letter Agreement dated December 16, 2014 wherein the parties ratified and confirmed the Lease notwithstanding that Amendments 3 through 7, inclusive, were executed by Original Tenant following the merger of Original Tenant into Tenant; and

WHEREAS, on March 16, 2015, Tenant changed its name from JS Genetics, Inc. to Interpace Diagnostics Lab Inc.; and

WHEREAS, the stated expiration date of the Lease was December 31, 2015, but Tenant has continued to occupy the Premises and pay rent under and pursuant to the terms of the Lease.

WHEREAS, Landlord and Tenant have agreed to further extend the term of the Lease and otherwise modify the Lease on the terms and conditions set forth below.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Landlord and Tenant hereby agree as follows:

1. Capitalized terms used but not defined herein shall have the meaning ascribed to each in the Lease.

2. Landlord and Tenant hereby ratify and confirm all the conditions of the Lease and amend the Lease as set forth in this Amendment.

3. As of January 1, 2016, the Premises has been remeasured and the parties agree that while there was no change to the footprint of the Premises, the rentable square feet of the Premises is hereby revised to be 1,520 (comprised of approximately 463 rentable square feet in Unit B-05B, and approximately 1,057 rentable square feet in Unit B-5). All references to the term "Premises" in the Lease are deemed to mean approximately 1,520 rentable square feet of space in the aggregate.

4. Landlord and Tenant acknowledge that Tenant has remained in possession of the Premises since December 31, 2015, continued to pay Basic Rent for the period January 1, 2016 through December 31, 2019 in the monthly amount of $3,034.93, and that all the terms and conditions of the Lease shall apply to this period of occupancy.

5. The Term of the Lease is hereby extended on the same terms and conditions set forth therein, as modified herein, until December 31, 2020.

6. The Basic Rent for the period from January 1, 2020 through December 31, 2020 shall be $38,000.00 per year, payable in equal monthly installments of $3,166.67 per month. Basic Rent shall be payable at the time and in the manner set forth in the Lease.

7. Tenant takes the Premises for the extended term “as is”.

8. Section 12.3 of the Lease (Termination of Lease) is hereby deleted.

9. Landlord and Tenant represent and warrant to the other that each has full authority to enter into this Amendment and further agree to hold harmless, defend, and indemnify the other from any loss, costs (including reasonable attorneys’ fees), damages, or claim arising from any lack of such authority.

10. As modified herein, the Lease is hereby ratified and confirmed and shall remain in full force and effect.

11. Landlord and Tenant hereby represent and warrant to the other that each has not dealt with any broker, finder or like agent in connection with this Amendment and each does hereby agree to indemnify and hold the other, its agents and their officers, directors, shareholders, members, partners and employees, harmless of and from any claim of, or liability to, any broker, finder or like agent claiming a commission or fee by reason of having dealt with either party in connection with the negotiation, execution or delivery of this Amendment, and all expenses related thereto, including, without limitation, reasonable attorneys’ fees and disbursements.

12. This Amendment constitutes the entire agreement by and between the parties hereto and supersedes any and all previous agreements, written or oral, between the parties. No modification or amendment of this Amendment shall be effective unless the same shall be in writing and signed by the parties hereto. The provisions of this Amendment shall inure to the benefit of, and be binding upon, the parties hereto and their respective legal representatives, successors and assigns.

13. This Amendment may be executed in any number of counterparts, each of which shall be deemed to be an original, and all of such counterparts shall constitute one agreement. This Amendment shall become effective when duly executed and delivered by all parties hereto.

[Remainder of Page Intentionally Blank; Signature Page Follows]

IN WITNESS WHEREOF, the Landlord and Tenant have signed this Amendment No. 8 to Lease as of the day and year first above written.

LANDLORD:

WE 2 CHURCH STREET SOUTH LLC

By: WE Church Manager LLC
Its Manager

/s/ Deborah A. Sweeney
Witness Deborah A. Sweeney

By: Winstanley Enterprises LLC
Its Manager

/s/ Pamela M. D'Ambrosio
Witness Pamela M. D'Ambrosio

By: */s/ Carter J. Winstanley*
Carter J. Winstanley
A Manager

TENANT:

INTERPACE DIAGNOSTICS LAB INC.

/s/ A. Mireskandari
Witness A. Mireskandari SVP, BD

By */s/ Jack E. Stover*

Name: Jack E. Stover

Title: President & CEO

[Signature Page to Amendment No. 8 to Lease by and between WE 2 Church Street South LLC and Interpace Diagnostics Lab Inc.]

Exhibit 10.36

FIRST LEASE AMENDMENT

THIS FIRST LEASE AMENDMENT (this "Amendment") is made and entered into as of September 26th, 2017 by and between SADDLE LANE REALTY, LLC, a Pennsylvania limited liability company (the "Landlord") and INTERPACE DIAGNOSTICS CORPORATION, a Delaware corporation (the "Tenant").

WITNESSTH:

WHEREAS, the Landlord and the Tenant are parties to that certain Lease Agreement dated March 31, 2017 (the "Lease"), for 20,000 leasable square feet located on the third and fourth floors of the building known as 2515 Liberty Avenue, Pittsburgh, Pennsylvania 15222.

WHEREAS, the parties seek to revise the Lease to: (i) extend the term of the Lease through and including June 30, 2018, and (ii) revise the Tenant's Option to Renew.

NOW THEREFORE, in consideration of the premises herein contained and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Landlord and Tenant, intending to be legally bound, agree as follows:

1. **Extension of Lease**. The Landlord and the Tenant hereby agree that the term of the Lease shall be extended to June 30, 2018. Monthly minimum rent shall remain $32,500.00 during the extended term.

2. **Revised Option to Renew**. Section 3.D. of the Lease (styled: *Option to Renew*) shall be deleted in its entirety and replaced with the following:

D. Option to Renew. Tenant shall have **one (1)** right and option to extend the term of this Lease for a period of three (3) to five (5) years if Landlord receives written notice of exercise of such option (which notice must include the period (not less than three (3) years nor more than five (5) years) in which this Lease is being extended, the "Renewal Notice") on or before **December 15th, 2017**. TIME IS OF THE ESSENCE. If Tenant timely delivers a Renewal Notice, all of the terms and conditions of the Lease shall apply to the extended lease, including the amount of minimum rent as set forth in Section 3.A.

3. **Ratification of Lease**. Except as modified by this Amendment, no other changes or modifications to the Lease are intended or implied and the Lease is hereby specifically ratified, confirmed and continues to remain in full force and effect.

[Signature Page to Follow]

IN WITNESS WHEREOF, the parties hereto executed this Amendment as of the day and year first above written.

WITNESS/ATTEST:

SADDLE LANE REALTY, LLC

By: */s/ David O. Brand*
David O. Brand, Sole Member

INTERPACE DIAGNOSTICS CORPORATION

By: */s/ Jack E. Stover*
Name: Jack E. Stover
Title: President & CEO

Exhibit 10.44

OFFICE LEASE AGREEMENT

BETWEEN

MEADOWS OFFICE, L.L.C.

AS LANDLORD

AND

CANCER GENETICS, INC.

AS TENANT

DATED

OCTOBER 9, 2007

TABLE OF CONTENTS

This Basic Lease Information is attached to and incorporated by reference to an Office Lease Agreement between Landlord and Tenant, as defined below.

Lease Date: OCTOBER 9, 2007

Landlord: Meadows Office, L.L.C., a Delaware limited liability company

Term: Cancer Genetics, Inc., a Delaware corporation

Premises: An area deemed to contain seventeen thousand nine hundred thirty-six (17,936) rentable square feet, located on the second (2nd) floor in the building commonly known as Building 201 of the Meadows Office Complex (the **"Building"),** and whose street address is 201 Route 17 North, Rutherford, New Jersey. The Premises are outlined on the plan attached to the Lease as Exhibit A. The land on which the Building is located (the **"Land")** is described on Exhibit B attached to this Lease. The term **"Project"** shall collectively refer to the Building, the Land and the driveways, parking facilities, and similar improvements and easements associated with the foregoing or the operation thereof, including without limitation the Common Areas (as defined in Section 7(c)). The term **"Complex"** shall collectively refer to the Building and any other buildings which comprise a multi building Complex owned by Landlord, if applicable.

Term: Approximately one hundred twenty (120) months, commencing on the Commencement Date and ending at 5:00 p.m. local time on the last day of the 120th full calendar month following the Commencement Date, subject to adjustment and earlier termination as provided in the Lease.

Term: Approximately one hundred twenty (120) months, commencing on the Commencement Date and ending at 5:00 p.m. local time on the last day of the 120th full calendar month following the Commencement Date, subject to adjustment and earlier termination as provided in the Lease.

Commencement Date: The earlier of: (a) the date on which Tenant occupies any portion of the Premises and begins conducting business therein; or (b) one hundred twenty (120) days after the date of execution and delivery of this Lease by Landlord and Tenant.

Base Rent: Base Rent shall be the following amounts for the following periods of time:

Lease Month	Annual Base Rent Rate Per Rentable Square Foot	Monthly Base Rent
1 - 36	$ 26.50	$ 39,608.67
37 -48	$ 27.50	$ 41,103.33
49-72	$ 28.50	$ 42,598.00
73 - 84	$ 30.50	$ 45,587.33
85 - 120	$ 31.50	$ 47,082.00

As used herein, the term **"Lease Month"** shall mean each calendar month during the Term (and if the Commencement Date does not occur on the first (1st) day of a calendar month, the period from the Commencement Date to the first (1st) day of the next calendar month shall be included in the first (1st) Lease Month for purposes of determining the duration of the Term and the monthly Base Rent rate applicable for such partial month).

Security Deposit:	$450,000.00 (initially, subject to reduction as provided in Section 6 hereof).
Rent:	Base Rent, Additional Rent, Taxes and Insurance (each as defined in Exhibit C hereto), and all other sums that Tenant may owe to Landlord or otherwise be required to pay under the Lease.
Permitted Use:	General office use and medical laboratory use consistent with office use, and for no other purpose whatsoever.
Tenant's Proportionate Share:	6.2187%, which is the percentage obtained by dividing (a) the number of rentable square feet in the Premises as stated above by (b) the rentable square feet in the Building at the time a respective charge was incurred, which at the time of execution of this Lease is 288,421 rentable square feet. Landlord and Tenant stipulate that the number of rentable square feet in the Premises and in the Building set forth above is conclusive as to the square footage in existence on the date of this Lease and shall be binding upon them.
Initial Liability Insurance Amount:	$3,000,000
Broker/Agent:	For Tenant: McBride Corporate Real Estate For Landlord: Newmark Knight Frank
Tenant's Address:	Prior to Commencement Date: 228 River Vale Road River Vale, New Jersey 07675 Attention: Louis Maione, President Telephone: (201) 263-1323 Telecopy: (201) 263-1328 Following Commencement Date: 201 Route 17 North Rutherford, New Jersey 07070 Attention: Louis Maione, President Telephone: (201) 263-1323 Telecopy: (201) 263-1328
Landlord's Address:	For all Notices: c/o Onyx Equities 900 Route 9 North Woodbridge, New Jersey 07095 Attention: Samuel Giordano, CFO Telephone: (732) 362-8800 Telecopy: (732) 362-8801

The foregoing Basic Lease Information is incorporated into and made a part of the Lease identified above. If any conflict exists between any Basic Lease Information and the Lease, then the Lease shall control.

LANDLORD: MEADOWS OFFICE, L.L.C., a Delaware limited liability company

By */s/ John Saracano Jr*

Name: John Saracano Jr

Title: Authorized Signatory

TENANT: CANCER GENETICS, a Delaware corporation

By */s/ Louis J. Maione*

Name: Louis J. Maione

Title: President, CEO

OFFICE LEASE AGREEMENT

1. **Definitions and Basic Lease Provisions.** The definitions and basic provisions set forth in the Basic Lease Information (the **"Basic Lease Information")** executed by Landlord and Tenant contemporaneously herewith are incorporated herein by reference for all purposes. Additionally, the following terms shall have the following meanings when used in this Lease: **"Affiliate"** means any person or entity which, directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with the party in question; **"Building's Structure"** means the Building's exterior walls, roof, elevator shafts (if any), footings, foundations, structural portions of load-bearing walls, structural floors and subfloors, and structural columns and beams; **"Building's Systems"** means the Premises' and Building's HVAC, life-safety, plumbing, electrical, and mechanical systems; **"Business Day(s)"** means Monday through Friday of each week, exclusive of Holidays; **"Holidays"** means New Year's Day, Presidents Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the day following Thanksgiving, Christmas Day, and any other nationally or regionally recognized holiday; **"including"** means including, without limitation; **"Laws"** means all federal, state, and local laws, ordinances, rules and regulations, all court orders, governmental directives, and governmental orders and all interpretations of the foregoing, and all restrictive covenants affecting the Project, and **"Law"** shall mean any of the foregoing; **"Normal Business Hours"** means 8:00 a.m. to 6:00 p.m. on Business Days and 8:00 a.m. to 1:00 p.m. on Saturdays, exclusive of Holidays; **"Tenant's Off-Premises Equipment"** means any of Tenant's equipment or other property that may be located on or about the Project (other than inside the Premises); and **"Tenant Party"** means any of the following persons: Tenant; any assignees claiming by, through, or under Tenant; any subtenants claiming by, through, or under Tenant; and any of their respective agents, contractors, employees, and invitees.

2. **Lease Grant.** Subject to the terms of this Lease, Landlord leases to Tenant, and Tenant leases from Landlord, the Premises (as defined in the Basic Lease Information).

3. **Tender of Possession.** Landlord and Tenant presently anticipate that possession of the Premises will be tendered to Tenant in the condition required by this Lease on or about the date of execution and delivery of this Lease by Landlord and Tenant (the **"Estimated Delivery Date").** If Landlord is unable to tender possession of the Premises in such condition to Tenant by the Estimated Delivery Date, then: (a) the validity of this Lease shall not be affected or impaired thereby; (b) Landlord shall not be in default hereunder or be liable for damages therefor; and (c) Tenant shall accept possession of the Premises when Landlord tenders possession thereof to Tenant. By occupying the Premises, Tenant shall be deemed to have accepted the Premises in their condition as of the date of such occupancy. After determination of the Commencement Date, Landlord may send Tenant a commencement letter confirming the Commencement Date, the Expiration Date and any other variable terms of the Lease. The commencement letter, which may be delivered by regular mail, shall become a part of this Lease and shall be binding on Tenant and Landlord if Tenant does not give Landlord notice of its disagreement with any of the provisions of such commencement letter within ten (10) days after the date of such letter. Occupancy of the Premises by Tenant prior to the Commencement Date shall be subject to all of the provisions of this Lease excepting only those requiring the payment of Rent. Tenant shall have access to the Premises twenty-four (24) hours per day, seven (7) days per week, with at least one (1) elevator being subject to call at all times for such purpose. Such access shall be subject, however, in all events, to the Building rules and regulations

4. **Rent.** Tenant shall timely pay to Landlord Rent (as defined in the Basic Lease Information), including the amounts set forth in Exhibit C hereto, without notice, demand, deduction or set-off (except as otherwise expressly provided herein), by good and sufficient check drawn on a national banking association at Landlord's address provided for in this Lease or as otherwise specified by Landlord and shall be accompanied by all applicable state and local sales or use taxes. The obligations of Tenant to pay Base Rent (as defined in the Basic Lease Information) and other sums to Landlord and the obligations of Landlord under this Lease are independent obligations. Base Rent, adjusted as herein provided, shall be payable monthly in advance. The first (1st) monthly installment of Base Rent shall be payable contemporaneously with the execution of this Lease; thereafter, Base Rent shall be payable on the first (1st) day of each month beginning on the first (1st) day of the second (2nd) full calendar month of the Term. The monthly Base Rent for any partial month at the beginning of the Term shall equal the product of 1/365 (or in the event of a leap year, 1/366) of the annual Base Rent in effect during the partial month and the number of days in the partial month, and shall be due on the Commencement Date. Payments of Base Rent for any fractional calendar month at the end of the Term shall be similarly prorated. Tenant shall pay Additional Rent, Taxes and Insurance (each as defined in Exhibit C) at the same time and in the same manner as Base Rent.

5. **Delinquent Payment; Handling Charges.** All past due payments required of Tenant hereunder shall bear interest from the date due until paid at the lesser of fifteen percent (15%) per annum or the maximum lawful rate of interest (such lesser amount is referred to herein as the **"Default Rate");** additionally, Landlord, in addition to all other rights and remedies available to it, may charge Tenant a fee equal to five percent (5%) of the delinquent payment to reimburse Landlord for its cost and inconvenience incurred as a consequence of Tenant's delinquency. In no event, however, shall the charges permitted under this Section 5 or elsewhere in this Lease, to the extent they are considered to be interest under applicable Law, exceed the maximum lawful rate of interest.

6. **Security Deposit.** Contemporaneously with the execution of this Lease, Tenant shall pay to Landlord the Security Deposit (as defined in the Basic Lease Information), which shall be held by Landlord to secure Tenant's performance of its obligations under this Lease. The Security Deposit is not an advance payment of Rent or a measure or limit of Landlord's damages upon an Event of Default (as defined in Section 17). Landlord may, at Landlord's discretion, from time to time following an Event of Default and without prejudice to any other remedy, use all or a part of the Security Deposit to put the Premises in the condition required under this Lease and to perform any obligation Tenant fails to perform hereunder or in connection with Landlord's remedies under this Lease. Following any such application of the Security Deposit, Tenant shall pay to Landlord on demand the amount so applied in order to restore the Security Deposit to its original amount. Subject to the requirements of, and conditions imposed by, Laws applicable to security deposits under commercial leases, Landlord shall, within the time required by applicable Law, return to Tenant the portion of the Security Deposit remaining after deducting all damages, charges and other amounts permitted by Law. Landlord and Tenant agree that such deductions shall include, without limitation, all damages and losses that Landlord has suffered or that Landlord reasonably estimates that it will suffer as a result of any breach of this Lease by Tenant. Unless required otherwise by applicable Law, the Security Deposit may be commingled with other funds, and no interest shall be paid thereon. If Landlord transfers its interest in the Premises, Landlord may assign the Security Deposit to the transferee and, upon such transfer (and the delivery to Tenant of an acknowledgment of the transferee's responsibility for the Security Deposit if required by Law), Landlord thereafter shall have no further liability for the return of the Security Deposit. The Security Deposit shall be in the form of an irrevocable, unconditional letter of credit (the **"Letter of Credit").** The Letter of Credit shall be addressed to Landlord, issued in a form and substance similar to that attached hereto as Exhibit G and by a financial institution approved by Landlord, in Landlord's sole discretion, shall be freely transferable without fee, and having an expiration date falling no sooner than ten (10) years and thirty (30) days after the Commencement Date. Tenant agrees that upon any default by Tenant under the terms and provisions of this Lease, Landlord shall have the right to receive payment under any Letter of Credit of the entire amount of such Letter of Credit at such time, and any such amounts received by Landlord shall be held by Landlord and applied in accordance with this Lease in the same manner as for a cash Security Deposit.

Provided no Event of Default shall have occurred under this Lease, the amount of the Security Deposit shall be reduced by $11,600.00 as of the second (2nd) anniversary of the Commencement Date, and by$54,800.00 as of each subsequent anniversary of the Commencement; provided, however, that in no event shall the Security Deposit be reduced to an amount less than $127,794.00. Prior to any such reduction, Tenant shall be required to have furnished to Landlord a replacement Letter of Credit in the reduced amount of such Security Deposit.

7. Services; Utilities; Common Areas.

(a) **Services.**

(i) Landlord shall use all reasonable efforts to furnish to Tenant: (i) water at those points of supply provided for general use of tenants of the Building; (ii) heated and refrigerated air conditioning as appropriate, at such temperatures and in such amounts as are required by governmental authority or as Landlord reasonably determines are standard for the Building; (iii) janitorial service to the Premises on weekdays, other than Holidays, for Building standard installations and such window washing as may from time to time be reasonably required; **(iv)** elevators for ingress and egress to the floor on which the Premises are located, in common with other tenants, provided that Landlord may limit the number of operating elevators during non business hours, during repairs, and Holidays; (v) replacement of Building-standard light bulbs and fluorescent tubes, provided that Landlord's standard charge for such bulbs and tubes shall be paid by Tenant; and (vi) electrical current during Normal Business Hours for equipment that does not require more than six (6) watts per usable square foot. If Tenant desires any of the services specified in Section 7(a)(ii) at a time other than Normal Business Hours, then such services shall be supplied to Tenant upon the written request of Tenant delivered to Landlord before 3:00 p.m. on the Business Day preceding such extra usage, and Tenant shall pay to Landlord the cost of such services within thirty (30) days after Landlord has delivered to Tenant an invoice therefor. The costs incurred by Landlord in providing HVAC service to Tenant at a time other than Normal Business Hours, shall include costs for electricity, water, sewage, water treatment, labor, metering, filtering, and maintenance reasonably allocated by Landlord to providing such service. Landlord's current charge for providing HVAC services at a time other than Normal Business Hours is $75.00 per hour.

(ii) (A) Tenant, as part of Tenant's Initial Alterations as described in Exhibit D attached hereto, shall install (and thereafter shall maintain) one or more electrical submeters to measure Tenant's demand and consumption with respect to the electricity furnished by Landlord (such submeter(s) being herein called **"Tenant's Submeter"),** including but not limited to electricity consumed by any supplemental HVAC equipment installed by or on behalf of Tenant, throughout the Term, shall pay Landlord for such electricity as measured by Tenant's Submeter at the rates set forth in, and otherwise pursuant to the provisions of, subparagraph (ii)(A) below.

(B) Tenant, for any billing period, shall pay Landlord an amount determined byapplying (i) Tenant's electrical demand (measured in KWs) and consumption (measured in KWHRs) for such period, as measured by Tenant's Submeter, to (ii) the rate schedule (inclusive of all taxes, surcharges and other charges payable thereunder or in connection therewith) of the utility company serving the Building which is charged to Landlord for such period. Tenant shall pay the amount due for any billing period within thirty (30) days after being billed therefor, which bills Landlord may render from time to time (but no more frequently than monthly). Tenant shall also pay to Landlord an amount equal to the actual out-of-pocket costs reasonably incurred by Landlord to a meter company or otherwise in respect of having Tenant's Submeter read and having bills prepared and delivered based upon such readings.

(b) **Excess Utility Use.** Landlord shall not be required to furnish electrical current for equipment that requires more than six (6) watts per usable square foot. If Tenant's requirements for or consumption of electricity exceed the electricity to be provided by Landlord as described in Section 7(a), Landlord shall, at Tenant's expense, make reasonable efforts to supply such service through the then-existing feeders and risers and electrical panels serving the Building and the Premises. Tenant shall not install any electrical equipment requiring special wiring or requiring voltage in excess of 110 volts unless approved in advance by Landlord, which approval shall not be unreasonably withheld. Tenant shall not install any electrical equipment requiring voltage in excess of Building capacity unless approved in advance by Landlord, which approval may be withheld in Landlord's sole discretion. The use of electricity in the Premises shall not exceed the capacity of existing feeders and risers and electrical panels to or wiring in the Premises. Any risers or wiring required to meet Tenant's excess electrical requirements shall, upon Tenant's written request, be installed by Landlord, at Tenant's cost, if, in Landlord's judgment, the same are necessary and shall not cause permanent damage to the Building or the Premises, cause or create a dangerous or hazardous condition, entail excessive or unreasonable alterations, repairs, or expenses, or interfere with or disturb other tenants of the Building. If Tenant uses machines or equipment in the Premises which affect the temperature otherwise maintained by the air conditioning system or otherwise overload any utility, Landlord may install supplemental air conditioning units or other supplemental equipment in the Premises, and the cost thereof, including the cost of installation, operation, use, and maintenance, shall be paid by Tenant to Landlord within thirty (30) days after Landlord has delivered to Tenant an invoice therefor. Landlord's obligation to furnish services under Section 7(a) shall be subject to the rules and regulations of the supplier of such services and governmental rules and regulations. Landlord may, upon not less than thirty (30) days' prior written notice to Tenant, discontinue any such service to the Premises, provided Landlord first arranges for a direct connection thereof through the supplier of such service. Tenant shall, however, be responsible for contracting with the supplier of such service and for paying all deposits for, and costs relating to, such service. Landlord shall use reasonable efforts to restore any service required of it that becomes unavailable; however, such unavailability shall not render Landlord liable for any damages caused thereby, be a constructive eviction of Tenant, constitute a breach of any implied warranty, or entitle Tenant to any abatement of Tenant's obligations hereunder.

(c) **Common Areas.** The term **"Common Area"** is defined for all purposes of this Lease as that part of the Project and/or Complex intended for the common use of all tenants, including among other facilities (as such may be applicable to the Complex), the ground floor lobby, elevator lobbies and hallways on multi-tenant floors, parking areas, private streets and alleys, landscaping, curbs, loading areas, sidewalks, malls and promenades (enclosed or otherwise), lighting facilities, drinking fountains, meeting rooms, public toilets, the parking garage, and the like, but excluding: (i) space in buildings (now or hereafter existing) designated for rental for commercial purposes, as the same may exist from time to time; (ii) streets and alleys maintained by a public authority; **(iii)** areas within the Complex which may from time to time not be owned by Landlord (unless subject to a cross-access agreement benefitting the area which includes the Premises); and (iv) areas leased to a single-purpose user where access is restricted. In addition, although the roof(s) of the building(s) in the Complex is not literally part of the Common Area, it will be deemed to be so included for purposes of: (i) Landlord's ability to prescribe rules and regulations regarding same; and (ii) its inclusion for purposes of Operating Costs reimbursements. Landlord reserves the right to change from time to time the dimensions and location of the Common Area, as well as the dimensions, identities, locations and types of any buildings, signs or other improvements in the Complex. For example, and without limiting the generality of the immediately preceding sentence, Landlord may from time to time substitute for any parking area other areas reasonably accessible to the tenants of the Building or Complex, as applicable, which areas may be elevated, surface or underground. Tenant, and its employees and customers, and when duly authorized pursuant to the provisions of this Lease, its subtenants, licensees and concessionaires, shall have the non-exclusive right to use the Common Area (excluding roof(s)) as constituted from time to time, such use to be in common with Landlord, other tenants in the Building and/or Complex, as applicable, and other persons permitted by the Landlord to use the same, and subject to rights of governmental authorities, easements, other restrictions of record, and such reasonable rules and regulations governing use as Landlord may from time to time prescribe. For example, and without limiting the generality of Landlord's ability to establish rules and regulations governing all aspects of the Common Area, Tenant agrees as follows:

(i) Tenant shall not solicit business within the Common Area nor take any action which would interfere with the rights of other persons to use the Common Area.

(ii) Landlord may temporarily close any part of the Common Area for such periods of time as may be necessary or advisable to make repairs or alterations or to prevent the public from obtaining prescriptive rights.

(iii) With regard to the roof(s) of the building(s) in the Project or Complex, as applicable, use of the roof(s) is reserved to Landlord, or with regard to any tenant demonstrating to Landlord's satisfaction a need to use same, to such tenant after receiving prior written consent from Landlord.

(d) **Parking.**

(i) For purposes of this Subsection (d), the following definitions shall apply: (i) the **"Parking Areas"** shall mean those areas of the Complex designated by Landlord, from time to time, for parking to serve the Building; (ii) the **"Reserved Parking Areas"** shall mean those portions of the Parking Areas designated by Landlord, from time to time, for reserved parking (i.e., for the exclusive use of one or more persons); and (iii) the **"General Parking Areas"** shall mean, from time to time, those portions of the Parking Areas which are not then Reserved Parking Areas.

(ii) Tenant, incident to its use of the Premises, shall have the exclusive right to use five (5) reserved parking spaces within the Reserved Parking Areas (the **"Tenant's Reserved Spaces"),** which Tenant's Reserved Spaces shall be designated by Landlord from time to time but which shall not be required to be located in the covered parking deck serving the Building. Tenant will be responsible (i) for the internal allocation of Tenant's Reserved Spaces and (ii) at Tenant's expense, for the enforcement of Tenant's exclusive right to use Tenant's Reserved Spaces. Landlord shall, at Tenant's expense, place a marking on each of Tenant's Reserved Spaces indicating that the same is a reserved parking space.

(iii) Tenant, incident to its use of the Premises, shall have the right to use the parking spaces located in the General Parking Areas, on a "first come, first served" basis in common with other persons designated by Landlord, subject, in all events, to the Building rules and regulations; provided, however, that at no time shall Tenant use, in the aggregate, a number of parking spaces in the General Parking Areas in excess of four (4) parking spaces in the General Parking Areas per each one thousand (1,000) rentable square feet of the Premises, less the number of Tenant's Reserved Spaces.

8. **Alterations; Repairs; Maintenance; Signs**

(a) **Alterations.** Tenant shall not make any alterations, additions or improvements to the Premises (collectively, the **"Alterations")** without the prior written consent of Landlord, except for the installation of unattached, movable trade fixtures which may be installed without drilling, cutting or otherwise defacing the Premises. Tenant shall furnish complete plans and specifications to Landlord for its approval at the time it requests Landlord's consent to any Alterations if the desired Alterations: (i) will affect the Building's Systems or Building's Structure; or (ii) will require the filing of plans and specifications with any governmental or quasi governmental agency or authority; or (iii) will cost in excess of Seventy-Five Thousand Dollars ($75,000.00). Subsequent to obtaining Landlord's consent and prior to commencement of the Alterations, Tenant shall deliver to Landlord any building permit required by applicable Law and a copy of the executed construction contract(s). Tenant shall (a) reimburse Landlord within ten (10) days after the rendition of a bill for all of Landlord's actual out-of-pocket costs incurred in connection with any Alterations, including all management, engineering, outside consulting, and construction fees incurred by or on behalf of Landlord for the review and approval of Tenant's plans and specifications and (b) (i) in the event Tenant elects to have Landlord's designated construction manager for the Building (herein called **"Landlord's Construction Manager")** provide construction management services with respect to such Alterations, Tenant shall pay Landlord's Construction Manager fifteen percent (15%) of the aggregate cost of such Alterations as compensation for such construction management services, or (ii) in the event Tenant does not elect to have Landlord's Construction Manager provide construction management services with respect to such Alterations, Tenant shall pay Landlord's Construction Manager a general supervision fee as compensation for general oversight and coordination by Landlord's Construction Manager equal to (A) if the Alterations project in question has an aggregate cost less than $100,000, five percent (5%) of the aggregate cost of such Alterations, or (B) if the Alterations project in question has an aggregate cost equal to or greater than $100,000, but less than $500,000, three percent (3%) of the aggregate cost of such Alterations, or (C) if the Alterations project in question has an aggregate cost equal to or greater than $500,000, two percent (2%) of the aggregate cost of such Alterations. Prior to commencing such Alterations, Tenant (i) shall furnish Landlord with an estimate of the cost of such Alterations (which estimate shall be subject to Landlord's reasonable review and approval), and (ii) shall pay to Landlord's Construction Manager the estimated amount of the construction management or general supervision fee described in the preceding sentence. If Landlord consents to the making of any Alteration, such Alteration shall be made by Tenant at Tenant's sole cost and expense by a contractor approved in writing by Landlord (and Landlord shall be entitled to designate the contractors to perform work affecting the Building's Systems). Tenant shall require its contractor to maintain insurance in such amounts and in such form as Landlord may require. Without Landlord's prior written consent, Tenant shall not use any portion of the Common Areas either within or without the Project or Complex, as applicable, in connection with the making of any Alterations. If the Alterations which Tenant causes to be constructed result in Landlord being required to make any alterations and/or improvements to other portions of the Project or Complex, as applicable, in order to comply with any applicable Laws, then Tenant shall reimburse Landlord upon demand for all costs and expenses incurred by Landlord in making such alterations and/or improvements. Any Alterations made by Tenant shall become the property of Landlord upon installation and shall remain on and be surrendered with the Premises upon the expiration or sooner termination of this Lease, unless Landlord requires the removal of such Alterations. If Landlord requires the removal of such Alterations, Tenant shall at its sole cost and expense, forthwith and with all due diligence (but in any event not later than ten (10) days after the expiration or earlier termination of the Lease) remove all or any portion of any Alterations made by Tenant which are designated by Landlord to be removed (including without limitation stairs, bank vaults, and Cable (as defined in Section 8(b) below), if applicable) and repair and restore the Premises in a good and workmanlike manner to their original condition, reasonable wear and tear excepted. All construction work done by Tenant within the Premises shall be performed in a good and workmanlike manner with new materials of first-class quality, lien-free and in compliance with all Laws and insurance requirements, and in such manner as to cause a minimum of interference with other construction in progress and with the transaction of business in the Project or Complex, as applicable. Tenant agrees to indemnify, defend and hold Landlord harmless from and against any and all loss, liability, damage cost or expense (including, without limitation, attorney's fees and disbursements and court costs) resulting from such work, and Tenant shall, if requested by Landlord, furnish a bond or other security satisfactory to Landlord against any such loss, liability or damage. The foregoing indemnity shall survive the expiration or earlier termination of this Lease. Landlord's consent to or approval of any alterations, additions or improvements (or the plans therefor) shall not constitute a representation or warranty by Landlord, nor Landlord's acceptance, that the same comply with sound architectural and/or engineering practices or with all applicable Laws and insurance requirements, and Tenant shall be solely responsible for ensuring all such compliance.

(b) **Repairs; Maintenance.**

(i) **By Landlord**. Landlord shall, subject to reimbursement as set forth in Exhibit C, keep and maintain in good repair and working order and make repairs to and perform maintenance upon: (1) structural elements of the Building; (2) standard mechanical (including HVAC), electrical, plumbing and fire/life safety systems serving the Building generally; (3) Common Areas; (4) the roof of the Building; (5) exterior windows of the Building; and (6) elevators serving the Building. Landlord shall not be liable for any failure to make any such repairs or to perform any maintenance unless such failure shall persist for an unreasonable time after written notice of the need of such repairs or maintenance is given to Landlord by Tenant. If any of the foregoing maintenance or repair is necessitated due to the acts or omissions of any Tenant Party, Tenant shall pay the costs of such repairs or maintenance to Landlord within thirty (30) days after receipt of an invoice, together with an administrative charge in an amount equal to fifteen percent (15%) of the cost of the repairs. Landlord shall not be liable to Tenant for any interruption of Tenant's business or inconvenience caused due to any work performed in the Premises or in the Complex pursuant to Landlord's rights and obligations under this Lease. Notwithstanding the foregoing, if, as a result of such work by Landlord (or Landlord's failure to perform any work or repair it is required to perform hereunder), (i) the Premises, or a material portion thereof, is rendered untenantable (meaning that Tenant is unable to use the Premises in the normal course of it business), and (ii) Tenant in fact ceases to use the Premises (or material portion thereof), then Tenant's sole remedy therefor shall be as follows: commencing after the expiration of five (5) consecutive business days following the later to occur of the date the Premises (or a material portion thereof) becomes untenantable, or the date Tenant ceases to use such space, the Rent payable hereunder shall be abated on a per diem basis for each day after such five (5) business day period based upon the percentage of the Premises not used by Tenant, and such abatement shall continue until the date the Premises become tenantable again. To the extent allowed by law, Tenant waives the right to make repairs at Landlord's expense under any law, statute or ordinance now or hereafter in effect.

(ii) **By Tenant.** Tenant shall, at its sole cost and expense, promptly perform all maintenance and repairs to the Premises that are not Landlord's express responsibility under this Lease, and shall keep the Premises in compliance with all applicable Laws and insurance requirements and in good condition and repair, ordinary wear and tear excepted. Tenant's repair obligations include, without limitation, repairs to: (1) floor covering and/or raised flooring; (2) interior partitions; (3) doors; (4) the interior side of demising walls; (5) electronic, phone and data cabling and related equipment (collectively, **"Cable")** that is installed by or for the benefit of Tenant and located in the Premises or other portions of the Building or Project; (6) supplemental air conditioning units, private showers and kitchens, including hot water heaters, plumbing, dishwashers, ice machines and similar facilities serving Tenant exclusively; (7) phone rooms used exclusively by Tenant; (8) Alterations performed by contractors retained by or on behalf of Tenant, including related HVAC balancing; and (9) all of Tenant's furnishings, trade fixtures, equipment and inventory. Landlord reserves the right to perform any of the foregoing maintenance or repair obligations or require that such obligations be performed by a contractor approved by Landlord, all at Tenant's expense. All work shall be performed in accordance with the rules and procedures described in Section 8(a). If Tenant fails to make any repairs to the Premises for more than thirty (30) days after notice from Landlord (although notice shall not be required if there is an emergency, or if the area to be repaired is visible from the exterior of the Building), Landlord may (but without any obligation), in addition to any other remedy available to Landlord, make the repairs, and Tenant shall pay the reasonable cost of the repairs to Landlord within thirty (30) days after receipt of an invoice, together with an administrative charge in an amount equal to fifteen percent (15%) of the cost of the repairs. At the expiration or earlier termination of this Lease, Tenant shall surrender the Premises in the condition required under this Lease, excepting reasonable wear and tear and losses required to be restored by Landlord. If Landlord elects to store any personal property of Tenant, including goods, wares, merchandise, inventory, trade fixtures and other personal property of Tenant, same shall be stored at the sole cost and risk of Tenant. Landlord or its agents shall not be liable for any loss or damage to persons or property resulting from fire, explosion, falling plaster, steam, gas, electricity, water or rain which may leak from any part of the Complex or from the pipes, appliances or plumbing works therein or from the roof, street or subsurface or from any other places resulting from dampness or any other cause whatsoever, or from the act or negligence of any other tenant or any officer, agent, employee, contractor or guest of any such tenant. It is generally understood that mold spores are present essentially everywhere and that mold can grow in most any moist location. Emphasis is properly placed on prevention of moisture and on good housekeeping and ventilation practices. Tenant acknowledges the necessity of housekeeping, ventilation, and moisture control (especially in kitchens, janitor's closets, bathrooms, break rooms and around outside walls) for mold prevention. In signing this Lease, Tenant has first inspected the Premises and certifies that it has not observed mold, mildew or moisture within the Premises. Tenant agrees to immediately notify Landlord if it observes mold/mildew and/or moisture conditions (from any source, including leaks), and allow Landlord to evaluate and make recommendations and/or take appropriate corrective action. Tenant relieves Landlord from any liability for any bodily injury or illness or damages to property caused by or associated with moisture or the growth of or occurrence of mold or mildew on the Premises. In addition, execution of this Lease constitutes acknowledgment by Tenant that control of moisture and mold prevention are integral to its Lease obligations.

(iii) **Performance of Work.** All work described in this Section 8 shall be performed only by contractors and subcontractors approved in writing by Landlord. Tenant shall cause all contractors and subcontractors to procured and maintain insurance coverage naming Landlord, Landlord's property management company and INVESCO Institutional (N.A.), Inc. **("Invesco")** as additional insureds against such risks, in such amounts, and with such companies as Landlord may reasonably require. Tenant shall provide Landlord with the identities, mailing addresses and telephone numbers of all persons performing work or supplying materials prior to beginning such construction and Landlord may post on and about the Premises notices of non-responsibility pursuant to applicable Laws. All such work shall be performed in accordance with all Laws and insurance requirements and in a good and workmanlike manner so as not to damage the Building (including the Premises, the Building's Structure or the Building's Systems). All such work which may affect the Building's Structure or the Building's Systems, at Landlord's election, must be performed by Landlord's usual contractor for such work or a contractor approved by Landlord. All work affecting the roof of the Building must be performed by Landlord's roofing contractor or a contractor approved by Landlord and no such work will be permitted if it would void or reduce the warranty on the roof.

(c) **Mechanic's Liens.** All work performed, materials furnished, or obligations incurred by or at the request of a Tenant Party shall be deemed authorized and ordered by Tenant only, and Tenant shall not permit any mechanic's or construction liens to be filed against the Premises or the Project in connection therewith. Upon completion of any such work, Tenant shall deliver to Landlord final lien waivers from all contractors, subcontractors and materialmen who performed such work. If such a lien is filed, then Tenant shall, within ten (10) business days after Landlord has delivered notice of the filing thereof to Tenant (or such earlier time period as may be necessary to prevent the forfeiture of the Premises, Project or any interest of Landlord therein or the imposition of a civil or criminal fine with respect thereto), either: (1) pay the amount of the lien and cause the lien to be released of record; or (2) diligently contest such lien and deliver to Landlord a bond or other security reasonably satisfactory to Landlord. If Tenant fails to timely take either such action, then Landlord may pay the lien claim, and any amounts so paid, including expenses and interest at the Default Rate, shall be paid by Tenant to Landlord within ten (10) days after Landlord has invoiced Tenant therefor. Landlord and Tenant acknowledge and agree that their relationship is and shall be solely that of "landlord-tenant" (thereby excluding a relationship of "owner contractor," "owner-agent" or other similar relationships). Accordingly, all materialmen, contractors, artisans, mechanics, laborers and any other persons now or hereafter contracting with Tenant, any contractor or subcontractor of Tenant or any other Tenant Party for the furnishing of any labor, services, materials, supplies or equipment with respect to any portion of the Premises, at any time from the date hereof until the end of the Term, are hereby charged with notice that they look exclusively to Tenant to obtain payment for same. Nothing herein shall be deemed a consent by Landlord to any liens being placed upon the Premises, Project or Landlord's interest therein due to any work performed by or for Tenant or deemed to give any contractor or subcontractor or materialman any right or interest in any funds held by Landlord to reimburse Tenant for any portion of the cost of such work. Tenant shall indemnify, defend and hold harmless Landlord, its property manager, Invesco, any subsidiary or affiliate of the foregoing, and their respective officers, directors, shareholders, partners, employees, managers, contractors, attorneys and agents (collectively, the **"Indemnitees")** from and against any and all claims, demands, causes of action, suits, judgments, damages and expenses (including attorneys' fees and disbursements and court costs) in any way arising from or relating to the failure by any Tenant Party to pay for any work performed, materials furnished, or obligations incurred by or at the request of a Tenant Party. The foregoing indemnity shall survive the expiration or earlier termination of this Lease.

(d) **Signs.** Tenant shall not place or permit to be placed any signs upon: (i) the roof of the Building; or (ii) the Common Areas; or (iii) any area visible from the exterior of the Premises without Landlord's prior written approval, which approval shall not be unreasonably withheld, conditioned or delayed provided any proposed sign is placed only in those locations as may be designated by Landlord, and complies with all Laws and insurance requirements and with the sign criteria promulgated by Landlord from time to time. Upon request of Landlord, Tenant shall immediately remove any sign, advertising material or lettering which Tenant has placed or permitted to be placed upon the exterior or interior surface of any door or window or at any point inside the Premises, which in Landlord's reasonable opinion, is of such a nature as to not be in keeping with the standards or character of the Building, and if Tenant fails to do so, Landlord may without liability remove the same at Tenant's expense. Tenant shall comply with such regulations as may from time to time be promulgated by Landlord governing signs, advertising material or lettering of all tenants in the Project or Complex, as applicable. The Tenant, upon vacation of the Premises, or the removal or alteration of its sign for any reason, shall be responsible for the repair, painting or replacement of the Building fascia surface or other portion of the Building where signs are attached. If Tenant fails to do so, Landlord may have the sign removed and the cost of removal plus fifteen percent (15%) as an administrative fee shall be payable by Tenant within ten (10) days of invoice. Landlord shall maintain a main directory for the Building's tenants and other occupants (which directory, from time to time, may be either manual or computerized), and provide Tenant with one (1) listing on such main directory. Landlord, from time to time, shall, at Tenant's expense, make such changes in the listing as Tenant shall request.

9. **Use.** Tenant shall continuously occupy and use the Premises only for the Permitted Use (as set forth in the Basic Lease Information) and shall comply with all Laws relating to the use, condition, access to, and occupancy of the Premises and will not commit waste, overload the Building's Structure or the Building's Systems or subject the Premises to use that would damage the Premises. Tenant, at its sole cost and expense, shall obtain and keep in effect during the term, all permits, licenses, and other authorizations necessary to permit Tenant to use and occupy the Premises for the Permitted Use in accordance with applicable Law and all insurance requirements. The population density within the Premises as a whole shall at no time exceed one person for each three hundred (300) rentable square feet in the Premises. Notwithstanding anything in this Lease to the contrary, as between Landlord and Tenant: (a) Tenant shall bear the risk of complying with Title III of the Americans With Disabilities Act of 1990, any state laws governing handicapped access or architectural barriers, and all rules, regulations, and guidelines promulgated under such laws, as amended from time to time (the **"Disabilities Acts")** in the Premises; and (b) Landlord shall bear the risk of complying with the Disabilities Acts in the Common Areas (subject to reimbursement as set forth in Exhibit C), other than compliance that is necessitated by the use of the Premises for other than the Permitted Use or as a result of any alterations or additions made by Tenant (which risk and responsibility shall be borne by Tenant). Tenant shall not use any substantial portion of the Premises for a "call center", any other telemarketing use, or any credit processing use. In addition, the Premises shall not be used for any purpose which creates strong, unusual, or offensive odors, fumes, dust or vapors; which emits noise or sounds that are objectionable due to intermittence, beat, frequency, shrillness, or loudness; which is associated with indecent or pornographic matters; or which involves political or moral issues (such as abortion issues). Tenant shall not use or permit the storage of any explosives, fuel or other hazardous or inflammable materials within the Premises other than such materials and in such quantities which are normal and customary in office space of this type and in compliance with all applicable Laws and insurance requirements. Tenant shall conduct its business and control each other Tenant Party so as not to create any nuisance or unreasonably interfere with other tenants or Landlord in its management of the Building. Tenant shall not knowingly conduct or permit to be conducted in the Premises any activity, or place any equipment in or about the Premises or the Building, which will invalidate the insurance coverage in effect or increase the rate of fire insurance or other insurance on the Premises or the Building. If any invalidation of coverage or increase in the rate of fire insurance or other insurance occurs or is threatened by any insurance company due to activity conducted from the Premises, or any act or omission by Tenant, or its agents, employees, representatives, or contractors, such statement or threat shall be conclusive evidence that the increase in such rate is due to such act of Tenant or the contents or equipment in or about the Premises, and, as a result thereof, Tenant shall be liable for such increase and shall be considered Additional Rent payable with the next monthly installment of Base Rent due under this Lease. In no event shall Tenant introduce or permit to be kept on the Premises or brought into the Building any dangerous, noxious, radioactive or explosive
substance.

10. Assignment and Subletting.

(a) **Transfers.** Tenant shall not, without the prior written consent of Landlord: **(1)** assign, transfer, or encumber this Lease or any estate or interest herein, whether directly or by operation of law; (2) permit any other entity to become Tenant hereunder by merger, consolidation, or other reorganization; (3) if Tenant is an entity other than a corporation whose stock is publicly traded, permit the transfer of an ownership interest in Tenant so as to result in a change in the current control of Tenant; (4) sublet any portion of the Premises; (5) grant any license, concession, or other right of occupancy of any portion of the Premises; or (6) permit the use of the Premises by any parties other than Tenant (any of the events listed in Section 10(a)(1) through Section 10(a)(6) being a **"Transfer").**

(b) **Consent Standards.** Landlord shall not unreasonably withhold its consent to any assignment or subletting of the Premises, provided that the proposed Transfer is not a sublease occurring during the first (1st) year of the Lease Term, Tenant is not then in default under this Lease and the proposed transferee: (1) is creditworthy in Landlord's reasonable judgment; (2) has a good reputation in the business community; (3) will use the Premises for the Permitted Use (thus, excluding without limitation, uses for credit processing and telemarketing) and will not use the Premises in any manner that would conflict with any exclusive use agreement or other similar agreement entered into by Landlord with any other tenant of the Project or Complex, as applicable; **(4)** will not use the Premises, Project or Complex in a manner that would materially increase the pedestrian or vehicular traffic to the Premises, Project or Complex; (5) is not a governmental entity, or subdivision or agency thereof or any other party which enjoys sovereign immunity; (6) is not another occupant of the Building or Complex, as applicable; and (7) is not a person or entity with whom Landlord is then, or has been within the six-month period prior to the time Tenant seeks to enter into such assignment or subletting, negotiating to lease space in the Building or Complex, as applicable, or any Affiliate of any such person or entity; otherwise, Landlord may withhold its consent in its sole discretion.

(c) **Request for Consent.** If Tenant requests Landlord's consent to a Transfer, then, at least thirty (30) days prior to the effective date of the proposed Transfer, Tenant shall provide Landlord with a written description of all terms and conditions of the proposed Transfer, copies of the proposed pertinent documentation, and the following information about the proposed transferee: name and address; reasonably satisfactory information about its business and business history; its proposed use of the Premises; banking, financial, and other credit information; and general references sufficient to enable Landlord to determine the proposed transferee's creditworthiness and character. Concurrently with Tenant's notice of any request for consent to a Transfer, Tenant shall pay to Landlord a fee of $1,000 to defray Landlord's expenses in reviewing such request, and Tenant shall also reimburse Landlord immediately upon request for its reasonable attorneys' fees incurred in connection with considering any request for consent to a Transfer.

(d) **Conditions to Consent.** If Landlord consents to a proposed Transfer, then the proposed transferee shall deliver to Landlord a written agreement whereby it expressly assumes Tenant's obligations hereunder; however, any transferee of less than all of the space in the Premises shall be liable only for obligations under this Lease that are properly allocable to the space subject to the Transfer for the period of the Transfer. In the event the Transfer consists of an assignment of Tenant's interest in this Lease, and the financial strength and creditworthiness of the proposed assignee is reasonably acceptable to Landlord (taking into account the nature and extent of the remaining obligations under the Lease as of the date of the Transfer in question), then, upon the occurrence of such Transfer in accordance with the terms and provisions of this Section 10, the assigning party shall be released from any further liability under this Lease (except for liability relating to obligations arising prior to the Transfer). Landlord's consent to any Transfer shall not be deemed consent to any subsequent Transfers. If an Event of Default occurs while the Premises or any part thereof are subject to a Transfer, then Landlord, in addition to its other remedies, may collect directly from such transferee all rents becoming due to Tenant and apply such rents against Rent. Tenant authorizes its transferees to make payments of rent directly to Landlord upon receipt of notice from Landlord to do so following the occurrence of an Event of Default hereunder. Tenant shall pay for the cost of any demising walls or other improvements necessitated by a proposed subletting or assignment.

(e) **Attornment by Subtenants.** Each sublease by Tenant hereunder shall be subject and subordinate to this Lease and to the matters to which this Lease is or shall be subject or subordinate, and each subtenant by entering into a sublease is deemed to have agreed that in the event of termination, re-entry or dispossession by Landlord under this Lease, Landlord may, at its option, either terminate the sublease or take over all of the right, title and interest of Tenant, as sublandlord, under such sublease, and such subtenant shall, at Landlord's option, attorn to Landlord pursuant to the then executory provisions of such sublease, except that Landlord shall not be: (1) liable for any previous act or omission of Tenant under such sublease; (2) subject to any counterclaim, offset or defense that such subtenant might have against Tenant; (3) bound by any previous modification of such sublease or by any rent or additional rent or advance rent which such subtenant might have paid for more than the current month to Tenant, and all such rent shall remain due and owing, notwithstanding such advance payment; (4) bound by any security or advance rental deposit made by such subtenant which is not delivered or paid over to Landlord and with respect to which such subtenant shall look solely to Tenant for refund or reimbursement; or (5) obligated to perform any work in the subleased space or to prepare it for occupancy, and in connection with such attornment, the subtenant shall execute and deliver to Landlord any instruments Landlord may reasonably request to evidence and confirm such attornment. Each subtenant or licensee of Tenant shall be deemed, automatically upon and as a condition of its occupying or using the Premises or any part thereof, to have agreed to be bound by the terms and conditions set forth in this Section *10(*e). The provisions of this Section 10(e) shall be self-operative, and no further instrument shall be required to give effect to this provision.

(f) **Cancellation.** Landlord may, within thirty (30) days after submission of Tenant's written request for Landlord's consent to an assignment or subletting, cancel this Lease with respect to an assignment or cancel this Lease as to the portion of the Premises proposed to be sublet as of the date the proposed Transfer is to be effective. If Landlord cancels this Lease as to any portion of the Premises, then this Lease shall cease for such portion of the Premises, Tenant shall pay to Landlord all Rent accrued through the cancellation date relating to the portion of the Premises covered by the proposed Transfer, and Rent shall be reduced proportionately based on the remaining square footage in the Premises. Thereafter, Landlord may lease such portion of the Premises to the prospective transferee (or to any other person) without liability to Tenant.

(g) **Additional Compensation.** Tenant shall pay to Landlord, immediately upon receipt thereof, the excess of all compensation received by Tenant for a Transfer over the Rent allocable to the portion of the Premises covered thereby.

(h) **Adequate Assurance of Future Performance.** Notwithstanding any restriction on assignment contained elsewhere in this Section 10, if the Tenant is permitted by any bankruptcy court or other court of competent jurisdiction to assign this Lease in any action for bankruptcy, insolvency, reorganization, liquidation, dissolution, or other proceeding affecting Tenant, or any other similar action which may be taken by any trustee, receiver or liquidator of Tenant, the assignment shall be conditioned upon such assignee being required to satisfy all outstanding defaults, whether monetary or non-monetary, under this Lease, and providing Landlord with Adequate Assurance of Future Performance. For purposes hereof, the term "Adequate Assurance of Future Performance" shall mean (i) the delivery by such assignee to Landlord of all financial information necessary to establish, to Landlord's reasonable satisfaction, that such assignee has a net worth (as determined in accordance with generally accepted accounting principles) acceptable to Landlord, and (ii) the delivery by such assignee to Landlord of security to secure the assignee's obligations under this Lease, which security may take the form of any one or more of the following as determined by Landlord: (A) an unconditional and irrevocable letter of credit available on sight in an amount acceptable to Landlord, issued by a bank satisfactory to Landlord, which shall contain, among other things, a so-called "evergreen clause", and which shall otherwise be acceptable in form and substance to Landlord, (B) delivery by such assignee to Landlord of a cash security deposit in an amount acceptable to Landlord, and/or (C) delivery by such assignee to Landlord of an unconditional guaranty of the Lease, in form and substance satisfactory to Landlord, from an entity having a net worth acceptable to Landlord.

11. Insurance; Waivers; Subrogation; Indemnity.

(a) **Tenant's Insurance.** Effective as of the earlier of: (1) the date Tenant enters or occupies the Premises; or (2) the Commencement Date, and continuing throughout the Term, Tenant shall maintain the following insurance policies: (A) commercial general liability insurance in amounts of $3,000,000 per occurrence, which shall apply on a per location basis, or, following the expiration of the initial Term, such other amounts as Landlord may from time to time reasonably require (and, if the use and occupancy of the Premises include any activity or matter that is or may be excluded from coverage under a commercial general liability policy [e.g., the sale, service or consumption of alcoholic beverages], Tenant shall obtain such endorsements to the commercial general liability policy or otherwise obtain insurance to insure all liability arising from such activity or matter [including liquor liability, if applicable] in such amounts as Landlord may reasonably require), insuring Tenant, Landlord, Landlord's property management company and Invesco against all liability for injury to or death of a person or persons or damage to property arising from the use and occupancy of the Premises and (without implying any consent by Landlord to the installation thereof) the installation, operation, maintenance, repair or removal of Tenant's Off-Premises Equipment with an additional insured endorsement in form CG 20 26 11 85; (B) Automobile Liability covering any owned, non-owned, leased, rented or borrowed vehicles of Tenant with limits no less than $3,000,000 combined single limit for property damage and bodily injury; (C) All Risk Property insurance covering the full value of all Alterations and improvements and betterments in the Premises, naming Landlord and Landlord's Mortgagee (as defined in Section 12(a)) as additional loss payees as their interests may appear; (D) All Risk Property insurance covering the full value of all furniture, trade fixtures and personal property (including property of Tenant or others) in the Premises or otherwise placed in the Project by or on behalf of a Tenant Party (including Tenant's Off-Premises Equipment) it being understood that no lack or inadequacy of insurance by Tenant shall in any event make Landlord subject to any claim by virtue of any theft of or loss or damage to any uninsured or inadequately insured property; (E) contractual liability insurance sufficient to cover Tenant's indemnity obligations hereunder (but only if such contractual liability insurance is not already included in Tenant's commercial general liability insurance policy); (F) worker's compensation insurance in amounts not less than statutorily required, and Employers' Liability insurance with limits of not less than Five Million Dollars ($3,000,000); (G) business interruption insurance in an amount that will reimburse Tenant for direct or indirect loss of earnings attributable to all perils insured against under Section 1l(a)(2)(C) or attributable to the prevention of access to the Building or Premises; (H) in the event Tenant performs any alterations or repairs in, on, or to the Premises, Builder's Risk Insurance on an All Risk basis (including collapse) on a completed value (non-reporting) form, or by endorsement including such coverage pursuant to Section 1l(a)(2)(C) hereinabove, for full replacement value covering all work incorporated in the Building and all materials and equipment in or about the Premises; and (I) such other insurance or any changes or endorsements to the insurance required herein, including increased limits of coverage, as Landlord, or any mortgagee or lessor of Landlord, may reasonably require from time to time. Tenant's insurance shall provide primary coverage to Landlord and shall not require contribution by any insurance maintained by Landlord, when any policy issued to Landlord provides duplicate or similar coverage, and in such circumstance Landlord's policy will be excess over Tenant's policy. Tenant shall furnish to Landlord certificates of such insurance, with an additional insured endorsement in form CG 20 26 11 85, and such other evidence satisfactory to Landlord of the maintenance of all insurance coverages required hereunder at least ten (10) days prior to the earlier of the Commencement Date or the date Tenant enters or occupies the Premises, and at least fifteen (15) days prior to each renewal of said insurance, and Tenant shall obtain a written obligation on the part of each insurance company to notify Landlord at least thirty (30) days before cancellation or a material change of any such insurance policies. All such insurance policies shall be in form, and issued by companies with a Best's rating of A:VII or better, reasonably satisfactory to Landlord. If Tenant fails to comply with the foregoing insurance requirements or to deliver to Landlord the certificates or evidence of coverage required herein, Landlord, in addition to any other remedy available pursuant to this Lease or otherwise, may, but shall not be obligated to, obtain such insurance and Tenant shall pay to Landlord on demand the premium costs thereof, plus an administrative fee of fifteen percent (15%) of such cost. It is expressly understood and agreed that the foregoing minimum limits of insurance coverage shall not limit the liability of Tenant for its acts or omissions as provided in this Lease.

(b) **Landlord's Insurance.** Throughout the Term of this Lease, Landlord shall maintain, as a minimum, the following insurance policies: (1) property insurance for the Building's replacement value (excluding property required to be insured by Tenant), less a commercially reasonable deductible if Landlord so chooses; and (2) commercial general liability insurance in an amount of not less than $3,000,000. Landlord may, but is not obligated to, maintain such other insurance and additional coverages as it may deem necessary. Tenant shall pay its Proportionate Share of the cost of all insurance carried by Landlord with respect to the Project or Complex, as applicable, as set forth on Exhibit C. The foregoing insurance policies and any other insurance carried by Landlord shall be for the sole benefit of Landlord and under Landlord's sole control, and Tenant shall have no right or claim to any proceeds thereof or any other rights thereunder.

(c) **No Subrogation.** Landlord and Tenant each waives any claim it might have against the other for any damage to or theft, destruction, loss, or loss of use of any property, to the extent the same is insured against under any insurance policy that covers the Building, the Premises, Landlord's or Tenant's fixtures, personal property, leasehold improvements, or business, or is required to be insured against under the terms hereof, regardless of whether the negligence of the other party caused such Loss (defined below). Landlord and Tenant each hereby waive any right of subrogation and right of recovery or cause of action for injury including death or disease to respective employees of either as covered by Worker's Compensation (or which would have been covered if Tenant or Landlord as the case may be, was carrying the insurance as required by this lease). Each party shall cause its insurance carrier to endorse all applicable policies waiving the carrier's rights of recovery under subrogation or otherwise against the other party.

(d) **Indemnity.** Subject to Section 11(c), Tenant shall indemnify, defend and hold harmless Landlord and the Indemnitees from and against any and all claims, demands, liabilities, causes of action, suits, judgments, damages, and expenses (including attorneys' fees and disbursements and court costs) and all losses and damages arising from: (1) any injury to or death of any person or the damage to or theft, destruction, loss, or loss of use of any property or inconvenience (a **"Loss")** arising from any occurrence on the Premises, the use of the Common Areas by any Tenant Party, or arising out of the installation, operation, maintenance, repair or removal of any of Tenant's Off-Premises Equipment; or (2) Tenant's failure to perform its obligations under this Lease or Tenant's breach of any of its covenants or negative covenants under this Lease, IN EACH CASE EVEN THOUGH CAUSED OR ALLEGED TO BE CAUSED BY THE NEGLIGENCE OR FAULT OF LANDLORD OR ITS AGENTS (OTHER THAN A LOSS ARISING FROM THE GROSS NEGLIGENCE OR WILLFUL MISCONDUCT OF LANDLORD OR ITS AGENTS). THIS INDEMNITY IS INTENDED TO INDEMNIFY LANDLORD AND ITS AGENTS AGAINST THE CONSEQUENCES OF THEIR OWN NEGLIGENCE OR FAULT (OTHER THAN A LOSS ARISING FROM THE GROSS NEGLIGENCE OR WILLFUL MISCONDUCT OF LANDLORD OR ITS AGENTS) AS PROVIDED ABOVE WHEN LANDLORD OR ITS AGENTS ARE JOINTLY, COMPARATIVELY, CONTRIBUTIVELY, OR CONCURRENTLY NEGLIGENT WITH TENANT. The indemnities set forth in this Section 11(d) shall survive the expiration or earlier termination of this Lease and shall not terminate or be waived, diminished or affected in any manner by any abatement or apportionment of Rent under any provision of this Lease. If any proceeding is filed for which indemnity is required hereunder, Tenant agrees, upon request therefor, to defend Landlord in such proceeding at its sole cost utilizing counsel satisfactory to Landlord in its sole discretion.

12. Subordination; Attornment; Notice to Landlord's Mortgagee.

(a) **Subordination.** This Lease shall be subordinate to any deed of trust, mortgage, or other security instrument (each, a **"Mortgage"),** or any ground lease, master lease, or primary lease (each, a **"Primary Lease"),** that now or hereafter covers all or any part of the Premises (the mortgagee under any such Mortgage, beneficiary under any such deed of trust, or the lessor under any such Primary Lease is referred to herein as a **"Landlord's Mortgagee").** Any Landlord's Mortgagee, as the case may be, may elect at any time, unilaterally, to make this Lease superior to its Mortgage, Primary Lease, or other interest in the Premises by so notifying Tenant in writing. The provisions of this Section shall be self-operative and no further instrument of subordination shall be required; however, in confirmation of such subordination, Tenant shall execute and return to Landlord (or such other party designated by Landlord) within ten (10) days after written request therefor such documentation, in recordable form if required, as a Landlord's Mortgagee may reasonably request to evidence the subordination of this Lease to such Landlord's Mortgagee's Mortgage or Primary Lease (including a subordination, non-disturbance and attornment agreement) or, if the Landlord's Mortgagee so elects, the subordination of such Landlord's Mortgagee's Mortgage or Primary Lease to this Lease. Landlord shall request that a subordination, non-disturbance and attornment agreement (an **"SNDA")** applicable to this Lease be provided by Landlord's presently existing Mortgagee and from future Mortgagees. Tenant shall pay any fee or costs of any such Mortgagee with respect to any such SNDA.

(b) **Attornment.** Tenant shall attorn to any party succeeding to Landlord's interest in the Premises, whether by purchase, foreclosure, deed in lieu of foreclosure, power of sale, termination of lease, or otherwise, upon such party's request, and shall execute such agreements confirming such attornment as such party may reasonably request.

(c) **Notice to Landlord's Mortgagee.** Tenant shall not seek to enforce any remedy it may have for any default on the part of Landlord without first giving written notice by certified mail, return receipt requested, specifying the default in reasonable detail, to any Landlord's Mortgagee whose address has been given to Tenant, and affording such Landlord's Mortgagee a reasonable opportunity to perform Landlord's obligations hereunder.

(d) **Landlord's Mortgagee's Protection Provisions.** If Landlord's Mortgagee shall succeed to the interest of Landlord under this Lease, Landlord's Mortgagee shall not be: (1) liable for any act or omission of any prior lessor (including Landlord); (2) bound by any rent or additional rent or advance rent which Tenant might have paid for more than one (1) month in advance to any prior lessor (including Landlord), and all such rent shall remain due and owing, notwithstanding such advance payment; (3) bound by any security or advance rental deposit made by Tenant which is not delivered or paid over to Landlord's Mortgagee and with respect to which Tenant shall look solely to Landlord for refund or reimbursement; (4) subject to the defenses which Tenant might have against any prior lessor (including Landlord); and (5) subject to the offsets which Tenant might have against any prior lessor (including Landlord) except for those offset rights which (A) are expressly provided in this Lease, (B) relate to periods of time following the acquisition of the Building by Landlord's Mortgagee, and (C) Tenant has provided written notice to Landlord's Mortgagee and provided Landlord's Mortgagee a reasonable opportunity to cure the event giving rise to such offset event. Landlord's Mortgagee shall have no liability or responsibility under or pursuant to the terms of this Lease or otherwise after it ceases to own an interest in the Building. Nothing in this Lease shall be construed to require Landlord's Mortgagee to see to the application of the proceeds of any loan, and Tenant's agreements set forth herein shall not be impaired on account of any modification of the documents evidencing and securing any loan.

13. **Rules and Regulations.** Tenant shall comply with the rules and regulations of the Building which are attached hereto as Exhibit E. Landlord may, from time to time, change such rules and regulations for the safety, care, or cleanliness of the Building and related facilities, provided that such changes are applicable to all tenants of the Building, will not unreasonably interfere with Tenant's use of the Premises and are enforced by Landlord in a non-discriminatory manner. Tenant shall be responsible for the compliance with such rules and regulations by each Tenant Party.

14. Condemnation.

(a) **Total Taking.** If the entire Building or Premises are taken by right of eminent domain or conveyed in lieu thereof (a **"Taking"),** this Lease shall terminate as of the date of the Taking.

(b) **Partial Taking - Tenant's Rights.** If any part of the Building becomes subject to a Taking and such Taking will prevent Tenant from conducting its business in the Premises in a manner reasonably comparable to that conducted immediately before such Taking for a period of more than one hundred eighty (180) days, then Tenant may terminate this Lease as of the date of such Taking by giving written notice to Landlord within thirty (30) days after the Taking, and Rent shall be apportioned as of the date of such Taking. If Tenant does not terminate this Lease, then Rent shall be abated on a reasonable basis as to that portion of the Premises rendered untenantable by the Taking.

(c) **Partial Taking- Landlord's Rights.** If any material portion, but less than all, of the Building becomes subject to a Taking, or if Landlord is required to pay any of the proceeds arising from a Taking to a Landlord's Mortgagee, then Landlord may terminate this Lease by delivering written notice thereof to Tenant within thirty (30) days after such Taking, and Rent shall be apportioned as of the date of such Taking. If Landlord does not so terminate this Lease, then this Lease will continue, but if any portion of the Premises has been taken, Rent shall abate as provided in the last sentence of Section 14(b).

(d) **Award.** If any Taking occurs, then Landlord shall receive the entire award or other compensation for the Land, the Building, and other improvements taken; however, Tenant may separately pursue a claim (to the extent it will not reduce Landlord's award) against the condemnor for the value of Tenant's personal property which Tenant is entitled to remove under this Lease, moving costs, loss of business, and other claims it may have.

15. Fire or Other Casualty.

(a) **Repair Estimate.** If the Premises or the Building are damaged by fire or other casualty (a **"Casualty"),** Landlord shall use good faith efforts to deliver to Tenant within sixty (60) days after such Casualty a good faith estimate (the **"Damage Notice")** of the time needed to repair the damage caused by such Casualty.

(b) **Tenant's Rights.** If a material portion of the Premises is damaged by Casualty such that Tenant is prevented from conducting its business in the Premises in a manner reasonably comparable to that conducted immediately before such Casualty and Landlord estimates that the damage caused thereby cannot be repaired within one hundred eighty (180) days after the commencement of repairs (the **"Repair Period"),** then Tenant may terminate this Lease by delivering written notice to Landlord of its election to terminate within thirty (30) days after the Damage Notice has been delivered to Tenant.

(c) **Landlord's Rights.** If a Casualty damages the Premises or a material portion of the Building and: (1) Landlord estimates that the damage to the Premises cannot be repaired within the Repair Period; (2) the damage to the Premises exceeds fifty percent (50%) of the replacement cost thereof (excluding foundations and footings), as estimated by Landlord, and such damage occurs during the last two (2) years of the Term; (3) regardless of the extent of damage to the Premises, Landlord makes a good faith determination that restoring the Building would be uneconomical; or (4) Landlord is required to pay any insurance proceeds arising out of the Casualty to a Landlord's Mortgagee, then Landlord may terminate this Lease by giving written notice of its election to terminate within thirty (30) days after the Damage Notice has been delivered to Tenant.

(d) **Repair Obligation.** If neither party elects to terminate this Lease following a Casualty, then Landlord shall, within a reasonable time after such Casualty, begin to repair the Premises and shall proceed with reasonable diligence to restore the Premises to substantially the same condition as they existed immediately before such Casualty; however, other than building standard leasehold improvements Landlord shall not be required to repair or replace any Alterations or betterments within the Premises (which shall be promptly and with due diligence repaired and restored by Tenant at Tenant's sole cost and expense) or any furniture, equipment, trade fixtures or personal property of Tenant or others in the Premises or the Building, and Landlord's obligation to repair or restore the Premises shall be limited to the extent of the insurance proceeds actually received by Landlord for the Casualty in question. If this Lease is terminated under the provisions of this Section 15, Landlord shall be entitled to the full proceeds of the insurance policies providing coverage for all Alterations, improvements and betterments in the Premises (and, if Tenant has failed to maintain insurance on such items as required by this Lease, Tenant shall pay Landlord an amount equal to the proceeds Landlord would have received had Tenant maintained insurance on such items as required by this Lease).

(e) **Abatement of Rent.** If the Premises are damaged by Casualty, Rent for the portion of the Premises rendered untenantable by the damage shall be abated on a reasonable basis from the date of damage until the completion of Landlord's repairs (or until the date of termination of this Lease by Landlord or Tenant as provided above, as the case may be), unless a Tenant Party caused such damage, in which case, Tenant shall continue to pay Rent without abatement.

16. **Personal Property Taxes.** Tenant shall be liable for all taxes levied or assessed against personal property, furniture, or fixtures placed by Tenant in the Premises or in or on the Building or Project. If any taxes for which Tenant is liable are levied or assessed against Landlord or Landlord's property and Landlord elects to pay the same, or if the assessed value of Landlord's property is increased by inclusion of such personal property, furniture or fixtures and Landlord elects to pay the taxes based on such increase, then Tenant shall pay to Landlord, within thirty (30) days following written request therefor, the part of such taxes for which Tenant is primarily liable hereunder.

17. Events of Default. Each of the following occurrences shall be an **"Event of Default":**

(a) **Payment Default.** Tenant's failure to pay Rent within five (5) business days after the same is due;

(b) **Abandonment.** Tenant abandons the Premises or any substantial portion thereof, or fails to continuously operate its business in the Premises, abandonment being defined as Tenant's vacation of the Premises and failure to meet one (1) or more lease obligations;

(c) **Estoppel/Financial Statement.** Tenant fails to provide: (i) any estoppel certificate after Landlord's written request therefor pursuant to Section *26(*e); or (ii) any financial statement after Landlord's written request therefor pursuant to Section 26(q), and such failure shall continue for five (5) business days after Landlord's second (2^{nd}) written notice thereof to Tenant;

(d) **Insurance.** Tenant fails to procure, maintain and deliver to Landlord evidence of the insurance policies and coverages as required under Section 1.1(a);

(e) **Mechanic's Liens.** Tenant fails to pay and release of record, or diligently contest and bond around, any mechanic's or construction lien filed against the Premises or the Project for any work performed, materials furnished, or obligation incurred by or at the request of Tenant, within the time and in the manner required by Section 8(c);

(f) **Other Defaults.** Tenant's failure to perform, comply with, or observe any other agreement or obligation of Tenant under this Lease and the continuance of such failure for a period of thirty (30) calendar days or more after Landlord has delivered to Tenant written notice thereof; and

(g) Insolvency. The filing of a petition by or against Tenant (the term **"Tenant"** shall include, for the purpose of this Section 17(g), any guarantor of Tenant's obligations hereunder): (1) in any bankruptcy or other insolvency proceeding; (2) seeking any relief under any state or federal debtor relief law; (3) for the appointment of a liquidator or receiver for all or substantially all of Tenant's property or for Tenant's interest in this Lease; or (4) for the reorganization or modification of Tenant's capital structure; however, if such a petition is filed against Tenant, then such filing shall not be an Event of Default unless Tenant fails to have the proceedings initiated by such petition dismissed within sixty (60) calendar days after the filing thereof.

18. **Remedies.** Upon any Event of Default, Landlord may, in addition to all other rights and remedies afforded Landlord hereunder or by law or equity, take any one or more of the following actions:

(a) **Termination of Lease.** Terminate this Lease by giving Tenant written notice thereof, in which event Tenant shall pay to Landlord the sum of: (1) all Rent accrued hereunder through the date of termination; (2) all amounts due under Section 19(a); and (3) an amount equal to (A) the total Rent that Tenant would have been required to pay for the remainder of the Term discounted to present value at a per annum rate equal to the Prime Rate **("Prime Rate"** shall be the per annum interest rate publicly announced by a federally insured bank selected by Landlord in the state in which the Premises is located as such bank's prime or base rate) minus one percent (1%), minus (B) the then present fair rental value of the Premises for such period, similarly discounted;

(b) **Termination of Possession.** Terminate Tenant's right to possess the Premises without terminating this Lease by giving written notice thereof to Tenant, in which event Tenant shall pay to Landlord: (1) all Rent and other amounts accrued hereunder to the date of termination of possession; (2) all amounts due from time to time under Section 19(a); and (3) all Rent and other net sums required hereunder to be paid by Tenant during the remainder of the Term, diminished by any net sums thereafter received by Landlord through reletting the Premises during such period, after deducting all costs incurred by Landlord in reletting the Premises. If Landlord elects to proceed under this Section 18(b), Landlord may remove all of Tenant's property from the Premises and store the same in a public warehouse or elsewhere at the cost of, and for the account of, Tenant, without becoming liable for any loss or damage which may be occasioned thereby. Landlord shall have no obligation to mitigate its damages hereunder. In this regard, Landlord shall not be liable for, nor shall Tenant's obligations hereunder be diminished because of, Landlord's failure to relet the Premises or to collect rent due for such reletting. Tenant shall not be entitled to the excess of any consideration obtained by reletting over the Rent due hereunder. Reentry by Landlord **in** the Premises shall not affect Tenant's obligations hereunder for the unexpired Term; rather, Landlord may, from time to time, bring an action against Tenant to collect amounts due by Tenant, without the necessity of Landlord's waiting until the expiration of the Term. Unless Landlord delivers written notice to Tenant expressly stating that it has elected to terminate this Lease, all actions taken by Landlord to dispossess or exclude Tenant from the Premises shall be deemed to be taken under this Section 18(b). If Landlord elects to proceed under this Section 18(b), it may at any time elect to terminate this Lease underSection 18(a);

(c) **Perform Acts on Behalf of Tenant.** Perform any act Tenant is obligated to perform under the terms of this Lease (and enter upon the Premises in connection therewith if necessary) in Tenant's name and on Tenant's behalf, without being liable for any claim for damages therefor, and Tenant shall reimburse Landlord on demand for any expenses which Landlord may incur in thus effecting compliance with Tenant's obligations under this Lease (including, but not limited to, collection costs and legal expenses), plus interest thereon at the Default Rate; or

(d) **Alteration of Locks.** Additionally, with notice if Tenant is then in physical possession of the Premises, upon court order authorizing the same, Landlord may alter locks or other security devices at the Premises to deprive Tenant of access thereto, and Landlord shall not be required to provide a new key or right of access to Tenant.

19. Payment by Tenant; Non-Waiver; Cumulative Remedies.

(a) **Payment by Tenant.** Upon any Event of Default, Tenant shall pay to Landlord all costs incurred by Landlord (including court costs and reasonable attorneys' fees and expenses) in: (1) obtaining possession of the Premises; (2) removing and storing Tenant's or any other occupant's property; (3) repairing, restoring, altering, remodeling, or otherwise putting the Premises into condition acceptable to a new tenant; (4) if Tenant is dispossessed of the Premises and this Lease is not terminated, reletting all or any part of the Premises (including brokerage commissions, cost of tenant finish work, and other costs incidental to such reletting); (5) performing Tenant's obligations which Tenant failed to perform; and (6) enforcing, or advising Landlord of, its rights, remedies, and recourses arising out of the Event of Default. To the full extent permitted by Law, Landlord and Tenant agree the federal and state courts of the state in which the Premises are located shall have exclusive jurisdiction over any matter relating to or arising from this Lease and the parties' rights and obligations under this Lease.

(b) **No Waiver.** Landlord's acceptance of Rent following an Event of Default shall not waive Landlord's rights regarding such Event of Default. No waiver by Landlord of any violation or breach of any of the terms contained herein shall waive Landlord's rights regarding any future violation of such term. Landlord's acceptance of any partial payment of Rent shall not waive Landlord's rights with regard to the remaining portion of the Rent that is due, regardless of any endorsement or other statement on any instrument delivered in payment of Rent or any writing delivered in connection therewith; accordingly, Landlord's acceptance of a partial payment of Rent shall not constitute an accord and satisfaction of the full amount of the Rent that is due.

(c) **Cumulative Remedies.** Any and all remedies set forth in this Lease: (1) shall be in addition to any and all other remedies Landlord may have at law or in equity; (2) shall be cumulative; and (3) may be pursued successively or concurrently as Landlord may elect. The exercise of any remedy by Landlord shall not be deemed an election of remedies or preclude Landlord from exercising any other remedies in the future.

20. **Landlord's Lien.** In addition to any statutory landlord's lien now in effect or hereafter enacted, Tenant grants to Landlord, to secure performance of Tenant's obligations hereunder, a security interest in all of Tenant's property situated in or upon, or used in connection with, the Premises or the Project, and all proceeds thereof (except merchandise sold in the ordinary course of business) (collectively, the **"Collateral"),** and the Collateral shall not be removed from the Premises or the Project without the prior written consent of Landlord until all obligations of Tenant have been fully performed. Such personalty thus encumbered includes specifically all trade and other fixtures for the purpose of this Section 20 and inventory, equipment, contract rights, accounts receivable and the proceeds thereof. Upon the occurrence of an Event of Default, Landlord may, in addition to all other remedies, without notice or demand except as provided below, exercise the rights afforded to a secured party under the Uniform Commercial Code of the state in which the Premises are located (the **"UCC").** To the extent the UCC requires Landlord to give to Tenant notice of any act or event and such notice cannot be validly waived before a default occurs, then five (5) days' prior written notice thereof shall be reasonable notice of the act or event. In order to perfect such security interest, Landlord may file any financing statement or other instrument necessary at Tenant's expense at the state and county Uniform Commercial Code filing offices. Tenant grants to Landlord a power of attorney coupled with an interest to execute and file any financing statement or other instrument necessary to perfect Landlord's security interest under this Section 20, which power is coupled with an interest and is irrevocable during the Term. Landlord may also file a copy of this Lease as a financing statement to perfect its security interest in the Collateral. Within ten (10) days following written request therefor, Tenant shall execute financing statements to be filed of record to perfect Landlord's security interest in the Collateral. The landlord's lien shall survive the expiration or earlier termination of the Lease, until all obligations of Tenant have been fully performed.

21. **Surrender of Premises.** No act by Landlord shall be deemed an acceptance of a surrender of the Premises, and no agreement to accept a surrender of the Premises shall be valid unless it is in writing and signed by Landlord. At the expiration or termination of this Lease, Tenant shall deliver to Landlord the Premises with all improvements located therein in the condition required to be maintained under this Lease, free of Hazardous Materials placed on the Premises during the Term, broom-clean, reasonable wear and tear (and condemnation and Casualty damage, as to which Section 14 and Section 15 shall control) excepted, and shall deliver to Landlord all keys to the Premises. Provided that Tenant has performed all of its obligations hereunder, Tenant may remove all unattached trade fixtures, furniture, and personal property placed in the Premises or elsewhere in the Building by Tenant (but Tenant may not remove any such item which was paid for, in whole or in part, by Landlord or any wiring or cabling unless Landlord requires such removal). Additionally, at Landlord's option, Tenant shall (not later than ten (10) days after the expiration or earlier termination of the Lease) remove such alterations, additions (including stairs and bath vaults), improvements, trade fixtures, personal property, equipment, wiring, conduits, cabling and furniture (including Tenant's Off-Premises Equipment) as Landlord may request. Tenant shall repair all damage caused by such removal. All items not so removed shall, at Landlord's option, be deemed to have been abandoned by Tenant and may be appropriated, sold, stored, destroyed, or otherwise disposed of by Landlord at Tenant's cost without notice to Tenant and without any obligation to account for such items; any such disposition shall not be considered a strict foreclosure or other exercise of Landlord's rights in respect of the security interest granted under Section 20. The provisions of this Section 21 shall survive the expiration or earlier termination of the Lease.

22. **Holding Over.** If Tenant fails to vacate the Premises at the end of the Term, then Tenant shall be a tenant at sufferance and, in addition to all other damages and remedies to which Landlord may be entitled for such holding over: (a) Tenant shall pay, in addition to the other Rent, Base Rent equal to the greater of: (1) two hundred percent (200%) of the Base Rent payable during the last month of the Term, or (2) one hundred fifty percent (150%) of the prevailing rental rate in the Building for similar space; and (b) Tenant shall otherwise continue to be subject to **all** of Tenant's obligations under this Lease. The provisions of this Section 22 shall not be deemed to limit or constitute a waiver of any other rights or remedies of Landlord provided herein or at Law. If Tenant fails to surrender the Premises upon the expiration or earlier termination of this Lease, in addition to any other liabilities to Landlord accruing therefrom, Tenant shall protect, defend, indemnify and hold Landlord harmless from and against any and all loss, costs (including reasonable attorneys' fees, disbursements and court costs) and liability resulting from such failure, including any claims made by any succeeding tenant founded upon such failure to surrender, and any lost profits to Landlord resulting therefrom. Notwithstanding the foregoing, if Tenant holds over with Landlord's express written consent, then Tenant shall be a month-to-month tenant and Tenant shall pay, in addition to the other Rent, Base Rent equal to one hundred twenty-five percent (125%) of the Base Rent payable during the last month of the Term.

23. **Certain Rights Reserved by Landlord.** Landlord shall have the following rights:

(a) **Building Operations.** To decorate and to make inspections, repairs, alterations, additions, changes, or improvements, whether structural or otherwise, in and about the Project or Complex, as applicable, or any part thereof; to enter upon the Premises (after giving Tenant reasonable notice thereof, which may be oral notice, except in cases of real or apparent emergency, in which case no notice shall be required) and, during the continuance of any such work, to temporarily close doors, entry ways, public space, and corridors in the Building; to interrupt or temporarily suspend Building services and facilities; to change the name of the Building; and to change the arrangement and location of entrances or passageways, doors, and doorways, corridors, elevators, stairs, restrooms, or other public parts of the Building;

(b) **Security.** To take such reasonable security measures as Landlord deems advisable (provided, however, that any such security measures are for Landlord's own protection, and Tenant acknowledges that Landlord is not a guarantor of the security or safety of any Tenant Party and that such security matters are the responsibility of Tenant); including evacuating the Building for cause, suspected cause, or for drill purposes; temporarily denying access to the Building; and closing the Building after Normal Business Hours and on Sundays and Holidays, subject, however, to Tenant's right to enter when the Building is closed after Normal Business Hours under such reasonable regulations as Landlord may prescribe from time to time;

(c) **Repairs and Maintenance.** To enter the Premises at all reasonable hours to perform Landlord's repair and maintenance obligations and rights under the Lease;

(d) **Prospective Purchasers and Lenders.** To enter the Premises at all reasonable hours to show the Premises to prospective purchasers or lenders; and

(e) **Prospective Tenants.** At anytime during the last nine (9) months of the Term (or earlier if Tenant has notified Landlord in writing that it does not desire to renew the Term) or at any time following the occurrence of an Event of Default, to enter the Premises at all reasonable hours to show the Premises to prospective tenants.

24. **Substitution Space.** On one (1) occasion during the Term prior to the last year of the Term, Landlord may, at Landlord's expense, relocate Tenant within the Building or Complex, as applicable, to space which is comparable in size, utility and condition to the Premises. If Landlord relocates Tenant, Landlord shall pay Tenant's reasonable out-of-pocket expenses for and relating to moving Tenant's fixtures (including but not limited to telephone and data cabling), furniture, equipment, and other personal property and supplies from the Premises to the relocation space and for reprinting Tenant's stationery of the same quality and quantity as Tenant's stationery supply on hand immediately before Landlord's notice to Tenant of the exercise of this relocation right, and shall, at Landlord's sole expense, construct improvements in and to the relocation space functionally equivalent to the improvements in the original Premises, and reinstall all of Tenant's fixtures (including but not limited to telephone and data cabling), furniture, equipment, and other personal property and supplies in the relocation space. Notwithstanding anything to the contrary contained in the Section 24, if, at the time of such relocation, the Premises are being used for clinical diagnostic laboratory use, the relocation space must be improved so as to meet the requirements promulgated by the College of American Pathologists and the Clinical Laboratory Improvements Amendment of 1988 as administered by the State of New Jersey and the regulations of the Department of Health of the State New York applicable to clinical diagnostic laboratories. Upon such relocation, the relocation space shall be deemed to be the Premises and the terms of the Lease to the relocation space. No amendment or other instrument shall be necessary to effectuate the relocation contemplated by this Section; however, if requested by Landlord, Tenant shall execute an appropriate amendment document within ten (10) Business Days after Landlord's written request therefor. If Tenant fails to execute such relocation amendment within such time period, or if Tenant fails to relocate within the time period stated in Landlord's relocation notice to Tenant (or, if such relocation space is not available on the date specified in Landlord's relocation notice, as soon thereafter as the relocation space becomes available and is tendered to Tenant in the condition required by this Lease), then Landlord may terminate this Lease by notifying Tenant in writing thereof at least sixty (60) days prior to the termination date contained in Landlord's termination notice. Time is of the essence with respect to Tenant's obligations under this Section.

25. Hazardous Materials.

(a) During the Term of this Lease, Tenant shall comply with all Environmental Laws (as defined in Section 25(j) below) applicable to the operation or use of the Premises, will cause all other persons occupying or using the Premises to comply with all such Environmental Laws and all insurance requirements, will immediately pay or cause to be paid all costs and expenses incurred by reason of such compliance.

(b) Tenant shall not generate, use, treat, store, handle, release or dispose of, or permit the generation, use, treatment, storage, handling, release or disposal of Hazardous Materials (as defined in Section 25(j) hereof) on the Premises, or the Complex, or transport or permit the transportation of Hazardous Materials to or from the Premises or the Complex except for limited quantities of household cleaning products and office supplies used or stored at the Premises and required in connection with the routine operation and maintenance of the Premises, and except as required in connection with Tenant's permitted laboratory use of the Premises, and in any event in compliance with all applicable Environmental Laws.

(c) At any time and from time to time during the term of this Lease, Landlord may perform, at Tenant's sole cost and expense, an environmental site assessment report concerning the Premises, prepared by an environmental consulting firm chosen by Landlord, indicating the presence or absence of Hazardous Materials caused or permitted by Tenant and the potential cost of any compliance, removal or remedial action in connection with any such Hazardous Materials on the Premises. Tenant shall grant and hereby grants to Landlord and its agents access to the Premises and specifically grants Landlord an irrevocable non-exclusive license to undertake such an assessment; and the cost of such assessment shall be immediately due and payable within thirty (30) days of receipt of an invoice therefor.

(d) Tenant will immediately advise Landlord in writing of any of the following: (1) any pending or threatened Environmental Claim (as defined in Section 25(j) below) against Tenant relating to the Premises or the Complex; (2) any condition or occurrence on the Premises or the Complex that (a) results in noncompliance by Tenant with any applicable Environmental Law or insurance requirement, or (b) could reasonably be anticipated to form the basis of an Environmental Claim against Tenant or Landlord or the Premises; (3) any condition or occurrence on the Premises or any property adjoining the Premises that could reasonably be anticipated to cause the Premises to be subject to any restrictions on the ownership, occupancy, use or transferability of the Premises under any Environmental Law; and (**4)** the actual or anticipated taking of any removal or remedial action by Tenant in response to the actual or alleged presence of any Hazardous Material on the Premises or the Complex. All such notices shall describe in reasonable detail the nature of the claim, investigation, condition, occurrence or removal or remedial action and Tenant's response thereto. In addition, Tenant will provide Landlord with copies of all communications regarding the Premises with any governmental agency relating to Environmental Laws, communications with any insurance carriers relating to environmental matters regarding the Premises, all such communications with any person relating to Environmental Claims, and such detailed reports of any such Environmental Claim as may reasonably be requested by Landlord.

(e) Tenant will not change or permit to be changed the present use of the Premises.

(f) Tenant agrees to indemnify, defend and hold harmless the Indemnitees from and against any and all obligations (including removal and remedial actions), losses, claims, suits, judgments, liabilities, penalties, damages (including consequential and punitive damages), costs and expenses (including reasonable attorneys' and consultants' fees and expenses) of any kind or nature whatsoever that may at any time be incurred by, imposed on or asserted against such Indemnitees directly or indirectly based on, or arising or resulting from (a) the actual or alleged presence of Hazardous Materials on the Complex which is caused or permitted by Tenant or a Tenant Party and (b) any Environmental Claim relating in any way to Tenant's operation or use of the Premises (the **"Hazardous Materials Indemnified Matters").** The provisions of this Section 25 shall survive the expiration or sooner termination of this Lease.

(g) To the extent that the undertaking in the preceding paragraph may be unenforceable because it is violative of any law or public policy, Tenant will contribute the maximum portion that it is permitted to pay and satisfy under applicable Law to the payment and satisfaction of all Hazardous Materials Indemnified Matters incurred by the Indemnitees.

(h) All sums paid and costs incurred by Landlord with respect to any Hazardous Materials Indemnified Matter shall bear interest at the Default Rate from the date so paid or incurred until reimbursed by Tenant, and all such sums and costs shall be immediately due and payable on demand.

(i) Without limiting any of the other provisions of this Section 25, Tenant shall, at all applicable times and a Tenant's sole cost and expense, comply with the Industrial Site Recovery Act, N.J.S.A. 13:IK-6 et seq. and the regulations promulgated thereunder ("ISRA"). Tenant shall make all submissions to, provide all information to and comply with all requirements of the New Jersey Department of Environmental Protection ("NJDEP"). Tenant shall promptly furnish to Landlord photocopies of all reports, notices, correspondence, filings and other documentation (i) **pertaining to the Worker and Community Right to Know Act, N.J.S.A 34:5A-1 et seq. and the regulations promulgated thereunder;** (ii) **pertaining to the Hazardous Substance Discharge Reports and Notices Act, N.J.S.A. 13:IK-15 et seq. and the regulations promulgated thereunder; and** (iii) **from Tenant to, or from NJDEP, the United States Environmental Protection Agency (the "EPA"), the United States Occupational Safety and Health Administration, or any other local, state or federal authority to Tenant, pertaining to ISRA or other environmental matters. Tenant shall also promptly furnish to Landlord true and complete copies of all sampling and test results obtained from samples and tests taken at and around the Premises. Tenant shall promptly provide all information requested by Landlord for Landlord's preparation of any responses required by a government agency regarding environmental conditions on the Premises. Tenant shall bear all costs and expenses, including attorneys fees, expert/consultant fees, and costs or expenses of investigation and/or remediation, incurred by Landlord associated with any actions necessary to comply with ISRA. As used in this Lease, costs and expenses necessary to comply with ISRA shall include, but not be limited to, the cost or expense of preparing applications for and obtaining determinations of non-applicability by the appropriate governmental authority. The foregoing undertaking shall survive the expiration or earlier termination of this Lease and surrender of the Premises and shall also survive any sale or other conveyance of the Premises by Landlord. Notwithstanding the foregoing, if Landlord sells the Premises to anyone other than Tenant or an affiliate thereof or there is a change in control of Landlord making ISRA applicable, the Landlord shall be responsible for all ISRA filings and Tenant shall cooperate with Landlord in connection therewith, provided that Tenant in any event shall be responsible for all costs associated with the investigation and/or remediation of any Hazardous Substances associated with Tenant's use of the Premises.**

If in connection with ISRA or any other Environmental Law a cleanup is to be undertaken because of any spill or discharge of Hazardous Substances or other event at the Premises occurring during the Term of this Lease other than those caused by Landlord, Tenant shall prepare and submit the required plans, provide necessary financial assurances and carry out the required plans.

As a condition precedent to Tenant's right to sublease all or any portion of the Premises or to assign or terminate this Lease, Tenant shall comply with ISRA. Any consent of Landlord to an assignment or subletting shall be contingent on Landlord's receipt of satisfactory evidence of such compliance.

Tenant will not use the Premises, or permit the Premises to be used, as a "Major Facility," as such term is defined in N.J.S.A. 58:10-23.11b(1). Without Landlord's prior written consent, which consent may be withheld in Landlord's sole and absolute discretion, Tenant shall not operate any business, allow any subtenant to operate any business, or assign this Lease to any party that will conduct any business, at the Premises which shall have a North American Industry Classification System ("NAICS") number, as defined in the 2002 edition of the NAICS issued by the federal Office of Management and Budget, which is subject to ISRA.

Tenant will keep the Premises free of any lien imposed pursuant to any Environmental Law that imposes liability for handling, storage, use, treatment, transportation, disposal or discharge of Hazardous Substances. Tenant shall promptly notify Landlord of any liens threatened or attached against the Premises pursuant to any Environmental Laws. In the event that any such lien shall be filed against the Premises by the NJDEP, pursuant to and in accordance with the provisions of the New Jersey Spill Compensation and Control Act (specifically N.J.S.A. 58:10-23.11f(t)), as a result of the Chief Executive of the New Jersey Spill Compensation Fund having expended monies from said fund pursuant to N.J.S.A. 58:10-23.11g, and/or "Cleanup and Removal Costs", as such term is defined in N.J.S.A. 58:10-23.11b(d), arising from an intentional or unintentional action or omission of any Tenant Party and resulting in the releasing, spilling, pumping, pouring, emitting, emptying or dumping of "Hazardous Substances", as such term is defined in N.J.S.A. 58:10-23.11b(k), at, on or about the Premises during the Term or as a result of any intentional or unintentional act or omission of Tenant, into waters of the State of New Jersey or onto lands from which it might flow or drain into said waters, then Tenant shall, within forty-five (45) days from the date that Tenant is given notice that the lien has been placed against the Premises (or within such shorter period of time in the event that the State of New Jersey has commenced steps to cause the Premises to be sold pursuant to the lien), either (i) pay the claim and remove the lien from the Premises or post such security with NJDEP so that NJDEP will release the lien, or (ii) furnish to Landlord or its designee either (1) a bond satisfactory to Landlord in the amount of the claim out of which the lien arises, (2) a cash deposit in the amount of the claim out of which the lien arises, or (3) other security reasonably satisfactory to the Landlord in an amount sufficient to discharge the claim out of which the lien arises.

If at any time during the Term a Release or threat of Release of Hazardous Materials has occurred at the Premises, or an event or condition has occurred that results in the Premises being in violation of or subject to liability under any Environmental Law (collectively, "Environmental Condition"), or a written notice, complaint, or order or finding of violation or non-compliance with or liability under any Environmental Law shall have been received by Tenant with respect to the Premises (collectively, "Environmental Claim"), Tenant shall promptly take (A) all actions in respect to such Environmental Condition necessary to prevent and/or eliminate any risk to human health or the environment and to comply with Environmental Law and (B) all actions in response to such Environmental Claim as necessary to cure any non-compliance and resolve any liability and/or penalties arising therefrom. If Landlord determines in its sole and absolute discretion that Tenant has failed to take prompt action to cure the Environmental Condition or any condition giving rise to an Environmental Claim, within the shorter of (A) the time period required by any applicable Environmental Law or (B) a reasonable time period, Landlord shall have the right, but not the obligation, to undertake any investigatory and/or remedial actions in response to any such condition that Landlord deems necessary or advisable in its sole and absolute discretion to prevent and/or eliminate any risk to human health or the environment and to comply with all applicable Environmental Laws. If Landlord determines in its sole and absolute discretion that Tenant has failed to diligently defend against any such Environmental Claim or to cure any non compliance and/or resolve any liability and/or penalties arising therefrom to Landlord's satisfaction within a reasonable time, Landlord shall have the right, but not the obligation, at Tenant's sole cost and expense, to undertake any actions in order to cure any non-compliance, resolve any liability and/or penalties arising therefrom, and/or defend such Environmental Claim. At all times, Tenant shall consult with and obtain Landlord's approval in performing any investigation and/or remediation of Environmental Conditions at the Premises and defending against any Environmental Claim, including but not limited to: (i) negotiating any compliance schedule, compliance orders, clean-up standards, permit, consent agreement, consent order, memorandum of understanding or other agreement, which may be required by any governmental agency; (ii) contesting, defending, settling or otherwise resolving complaints, directives or other demands by any such governmental agency; (iii) bringing claims against, defending against and settling or otherwise resolving claims brought by, or otherwise establishing liability of or to third parties; and/or (iv) implementing any measures necessary to satisfy the agreements or other terms resulting from any such negotiation, litigation, direction by a governmental agency, or other resolution of such matters.

With regard to any remedial action Tenant undertakes pursuant to this Article 25 or pursuant to any Environmental Law, Tenant shall (i) not propose or undertake to impose any institutional or engineering controls upon the Premises, including but not limited to deed notices, declarations of environmental restrictions or environmental caps, without first obtaining the consent of Landlord (which consent may be granted or withheld in Landlord's sole and absolute discretion), and (ii) at Landlord's sole and absolute discretion, perform all such investigation and/or remedial activities as are necessary to comply with Environmental Laws without the use of such institutional or engineering controls.

Tenant's obligations and liabilities under this Article 25 shall survive (i) the expiration or earlier termination of this Lease even if the Tenant acquires title to the Premises, and (ii) any longer period during which Landlord remains responsible or liable for any Release or threat of Release of Hazardous Substances at the Premises arising from Tenant's use of the Premises or any violations of Environmental Laws arising from or associated with Tenant's use of the Premises.

(j) (a) "Hazardous Materials" means: (i) petroleum or petroleum products, natural or synthetic gas, asbestos in any form that is or could become friable, urea formaldehyde foam insulation, and radon gas; (ii) any substances defined as or included in the definition of "hazardous substances," "hazardous wastes," "hazardous materials," "extremely hazardous wastes," "restricted hazardous wastes," "toxic substances," "toxic pollutants," "contaminants" or "pollutants," or words of similar import, under any applicable Environmental Law; and (iii) any other substance exposure which is regulated by any governmental authority; (b) "Environmental Law" means any federal, state or local statute, law, rule, regulation, ordinance, code, policy or rule of common law now or hereafter in effect and in each case as amended, and any judicial or administrative interpretation thereof, including any judicial or administrative order, consent decree or judgment, relating to the environment, health, safety or Hazardous Materials, including without limitation, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9601 et seq.; the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 et seq.; the Hazardous Materials Transportation Act, 49 U.S.C. §§ 1801 et seq.; the Clean Water Act, 33 U.S.C. §§ 1251 et seq.; the Toxic Substances Control Act, 15 U.S.C. §§ 2601 et seq.; the Clean Air Act, 42 U.S.C. §§ 7401 et seq.; the Safe Drinking Water Act, 42 U.S.C. §§ 300f et seq.; the Atomic Energy Act, 42 U.S.C. §§ 2011 et seq.; the Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. §§ 136 et seq.; the Occupational Safety and Health Act, 29 U.S.C. §§ 651 et seq.; the New Jersey Industrial Site Recovery Act, N.J.S.A. §§ 13:IK-6 et seq. ("ISRA"); the New Jersey Spill Compensation and Control Act, N.J.S.A. §§ 58: 10-23.11 et. seq.; (c) "Environmental Claims" means any and all administrative, regulatory or judicial actions, suits, demands, demand letters, claims, liens, notices of non-compliance or violation, investigations, proceedings, consent orders or consent agreements relating in any way to any Environmental Law or any Environmental Permit, including without limitation **(i)** any and all Environmental Claims by governmental or regulatory authorities for enforcement, cleanup, removal, response, remedial or other actions or damages pursuant to any applicable Environmental Law and (ii) any and all Environmental Claims by any third party seeking damages, contribution, indemnification, cost recovery, compensation or injunctive relief resulting from Hazardous Materials or arising from alleged injury or threat of injury to health, safety or the environment.

26. Miscellaneous.

(a) **Landlord Transfer.** Landlord may transfer any portion of the Building and any of its rights under this Lease. If Landlord assigns its rights under this Lease, then Landlord shall thereby be released from any further obligations hereunder arising after the date of transfer, provided that the assignee assumes Landlord's obligations hereunder in writing.

(b) **Landlord's Liability.** The liability of Landlord (and its partners, shareholders or members) to Tenant (or any person or entity claiming by, through or under Tenant) for any default by Landlord under the terms of this Lease or any matter relating to or arising out of the occupancy or use of the Premises and/or other areas of the Building or Complex shall be limited to Tenant's actual direct, but not consequential, damages therefor and shall be recoverable only from the interest of Landlord in the Building, and Landlord (and its partners, shareholders or members) shall not be personally liable for any deficiency. Additionally, to the extent allowed by Law, Tenant hereby waives any statutory lien it may have against Landlord or its assets, including without limitation, the Building.

(c) **Force Majeure.** Other than for Tenant's obligations under this Lease that can be performed by the payment of money (e.g., payment of Rent and maintenance of insurance), whenever a period of time is herein prescribed for action to be taken by either party hereto, such party shall not be liable or responsible for, and there shall be excluded from the computation of any such period of time, any delays due to strikes, riots, acts of God, shortages of labor or materials, war, governmental laws, regulations, or restrictions, or any other causes of any kind whatsoever which are beyond the control of such party.

(d) **Brokerage.** Neither Landlord nor Tenant has dealt with any broker or agent in connection with the negotiation or execution of this Lease, other than as set forth in the Basic Lease Information. Tenant shall indemnify, defend and hold Landlord harmless from and against any and all costs, expenses, attorneys' fees and disbursements, liens and other liability for commissions or other compensation claimed by any broker or agent claiming the same by, through, or under Tenant. The foregoing indemnity shall survive the expiration or earlier termination of the Lease.

(e) **Estoppel Certificates.** From time to time, Tenant shall furnish to any party designated by Landlord, within ten (10) days after Landlord has made a request therefor, a certificate signed by Tenant confirming and containing such factual certifications and representations as to this Lease as Landlord may reasonably request. Unless otherwise required by Landlord's Mortgagee or a prospective purchaser or mortgagee of the Building, the initial form of estoppel certificate to be signed by Tenant is attached hereto as Exhibit F.

(f) **Notices.** All notices and other communications given pursuant to this Lease shall be in writing and shall be: (1) mailed by first class, United States Mail, postage prepaid, certified, with return receipt requested, and addressed to the parties hereto at the address specified in the Basic Lease Information; (2) hand delivered to the intended addressee; (3) sent by a nationally recognized overnight courier service; or (4) sent by facsimile transmission during Normal Business Hours followed by a copy of such notice sent in another manner permitted hereunder. **All** notices shall be effective upon the earlier to occur of actual receipt, one (1) Business Day following deposit with a nationally recognized overnight courier service, or three (3) days following deposit in the United States mail. The parties hereto may change their addresses by giving notice thereof to the other in conformity with this provision.

(g) **Separability.** If any clause or provision of this Lease is illegal, invalid, or unenforceable under present or future laws, then the remainder of this Lease shall not be affected thereby and in lieu of such clause or provision, there shall be added as a part of this Lease a clause or provision as similar in terms to such illegal, invalid, or unenforceable clause or provision as may be possible and be legal, valid, and enforceable.

(h) **Amendments; Binding Effect.** This Lease may not be amended except by instrument in writing signed by Landlord and Tenant. No provision of this Lease shall be deemed to have been waived by Landlord unless such waiver is in writing signed by Landlord, and no custom or practice which may evolve between the parties in the administration of the terms hereof shall waive or diminish the right of Landlord to insist upon the performance by Tenant in strict accordance with the terms hereof. The terms and conditions contained in this Lease shall inure to the benefit of and be binding upon the parties hereto, and upon their respective successors in interest and legal representatives, except as otherwise herein expressly provided. This Lease is for the sole benefit of Landlord and Tenant, and, other than Landlord's Mortgagee, no third party shall be deemed a third party beneficiary hereof.

(i) **Quiet Enjoyment.** Provided Tenant has performed all of its obligations hereunder, Tenant shall peaceably and quietly hold and enjoy the Premises for the Term, without hindrance from Landlord or any party claiming by, through, or under Landlord, but not otherwise, subject to the terms and conditions of this Lease.

(j) **No Merger.** There shall be no merger of the leasehold estate hereby created with the fee estate in the Premises or any part thereof if the same person acquires or holds, directly or indirectly, this Lease or any interest in this Lease and the fee estate in the leasehold Premises or any interest in such fee estate.

(k) **No Offer.** The submission of this Lease to Tenant shall not be construed as an offer, and Tenant shall not have any rights under this Lease unless Landlord executes a copy of this Lease and delivers it to Tenant.

(l) **Entire Agreement.** This Lease constitutes the entire agreement between Landlord and Tenant regarding the subject matter hereof and supersedes all oral statements and prior writings relating thereto. Except for those set forth in this Lease, no representations, warranties, or agreements have been made by Landlord or Tenant to the other with respect to this Lease or the obligations of Landlord or Tenant in connection therewith. The normal rule of construction that any ambiguities be resolved against the drafting party shall not apply to the interpretation of this Lease or any exhibits or amendments hereto.

(m) **Waiver of Jury Trial.** TO THE MAXIMUM EXTENT PERMITTED BY LAW, LANDLORD AND TENANT EACH WAIVE ANY RIGHT TO TRIAL BY JURY IN ANY LITIGATION OR TO HAVE A JURY PARTICIPATE IN RESOLVING ANY DISPUTE ARISING OUT OF OR WITH RESPECT TO THIS LEASE OR ANY OTHER INSTRUMENT, DOCUMENT OR AGREEMENT EXECUTED OR DELIVERED IN CONNECTION HEREWITH OR THE TRANSACTIONS RELATED HERETO.

(n) **Governing Law.** This Lease shall be governed by and construed in accordance with the laws of the state in which the Premises are located.

(o) **Recording.** Tenant shall not record this Lease or any memorandum or short form of this Lease without the prior written consent of Landlord, which consent may be withheld or denied in the sole and absolute discretion of Landlord, and any recordation by Tenant shall be a material breach of this Lease. Tenant grants to Landlord a power of attorney to execute and record a release releasing any such recorded instrument of record that was recorded without the prior written consent of Landlord, which power of attorney is coupled with an interest and is non revocable during the Term.

(p) **Joint and Several Liability.** If Tenant is comprised of more than one (1) party, each such party shall be jointly and severally liable for Tenant's obligations under this Lease. All unperformed obligations of Tenant hereunder not fully performed at the end of the Term shall survive the end of the Term, including payment obligations with respect to Rent and all obligations concerning the condition and repair of the Premises.

(q) **Financial Reports.** Within fifteen (15) days after Landlord's request, Tenant will furnish Tenant's most recent audited financial statements (including any notes to them) to Landlord, or, if no such audited statements have been prepared, such other financial statements (and notes to them) as may have been prepared by an independent certified public accountant or, failing those, Tenant's internally prepared financial statements. If Tenant is a publicly traded corporation, Tenant may satisfy its obligations hereunder by providing to Landlord Tenant's most recent annual and quarterly reports. Landlord will not disclose any aspect of Tenant's financial statements that Tenant designates to Landlord as confidential except: (1) to Landlord's Mortgagee or prospective mortgagees or purchasers of the Building; (2) in litigation between Landlord and Tenant; and (3) if required by court order. Tenant shall not be required to deliver the financial statements required under this Section 26(q) more than once in any twelve (12) month period unless requested by Landlord's Mortgagee or a prospective buyer or lender of the Building.

(r) **Landlord's Fees.** Whenever Tenant requests Landlord to take any action not required of it hereunder or give any consent required or permitted under this Lease, Tenant will reimburse Landlord for Landlord's reasonable, out-of-pocket costs payable to third parties and incurred by Landlord in reviewing the proposed action or consent, including reasonable attorneys', engineers' or architects' fees, within thirty (30) days after Landlord's delivery to Tenant of a statement of such costs. Tenant will be obligated to make such reimbursement without regard to whether Landlord consents to any such proposed action.

(s) **Telecommunications.** Tenant and its telecommunications companies, including local exchange telecommunications companies and alternative access vendor services companies, shall have no right of access to and within the Building, for the installation and operation of telecommunications systems, including voice, video, data, Internet, and any other services provided over wire, fiber optic, microwave, wireless, and any other transmission systems **("Telecommunications Services"),** for part or all of Tenant's telecommunications within the Building and from the Building to any other location without Landlord's prior written consent. All providers of Tele communications Services shall be required to comply with the rules and regulations of the Building, applicable Laws and Landlord's policies and practices for the Building. Tenant acknowledges that Landlord shall not be required to provide or arrange for any Telecommunications Services and that Landlord shall have no liability to any Tenant Party in connection with the installation, operation or maintenance of Telecommunications Services or any equipment or facilities relating thereto. Tenant, at its cost and for its own account, shall be solely responsible for obtaining all Telecommunications Services.

(t) **Confidentiality.** Tenant acknowledges that the terms and conditions of this Lease are to remain confidential for Landlord's benefit, and may not be disclosed by Tenant to anyone, by any manner or means, directly or indirectly, without Landlord's prior written consent. The consent by Landlord to any disclosures shall not be deemed to be a waiver on the part of Landlord of any prohibition against any future disclosure.

(u) **Authority.** Tenant (if a corporation, partnership or other business entity) hereby represents and warrants to Landlord that Tenant is a duly formed and existing entity qualified to do business in the state in which the Premises are located, that Tenant has full right and authority to execute and deliver this Lease, and that each person signing on behalf of Tenant is authorized to do so.

(v) **List of Exhibits.** All exhibits and attachments attached hereto are incorporated herein by this reference.

Exhibit A - Outline of Premises
Exhibit B - Description of the Land
Exhibit C - Additional Rent, Taxes, Insurance and Utilities
Exhibit D - Tenant Finish-Work
Exhibit E - Building Rules and Regulations
Exhibit F - Form of Tenant Estoppel Certificate
Exhibit G - Form of Letter of Credit
Exhibit H - Renewal Option
Exhibit I - Guaranty

27. **OSHA Regulations.** Tenant acknowledges that it has been notified of the presence or potential presence of asbestos-containing materials **("ACM")** and materials designated by the Occupational Safety and Health Administration **("OSHA")** as presumed asbestos-containing materials **("PACM")** located in the Premises, the Building or the Complex. The following materials must, in accordance with OSHA regulations, be treated as PACM: any thermal system insulation and surfacing material that is sprayed on, troweled on, or applied in some other manner, as well as any resilient flooring material installed in 1980 or earlier. Upon written request by Tenant, Landlord shall provide Tenant with copies of any information pertaining to ACM or PACM in Landlord's files. Notwithstanding the foregoing, Landlord represents to Tenant that, to Landlord's actual knowledge, there is no friable asbestos in the Building.

28. **Guaranty.** In order to induce Landlord to enter into this Lease and in consideration of Landlord's entering into this Lease, the full and faithful keeping, performance and observance of all the covenants, agreements, terms, provisions and conditions of this Lease provided to be kept, performed and observed by Tenant (expressly including, without being limited to, the payment as and when due of the Rent payable by Tenant under this Lease) and the payment of any and all other damages for which Tenant shall be liable by reason of any act or omission contrary to any of said covenants, agreements, terms, provisions or conditions is being guaranteed by Louis Maione and Raju Chaganti (together, **"Guarantors"),** by the execution by Guarantors of the Guaranty attached to and made a part of this Lease as Exhibit I (the **"Guaranty").** Tenant confirms and acknowledges that Landlord would not have entered into this Lease but for the giving of the Guaranty by Guarantors.

LANDLORD AND TENANT EXPRESSLY DISCLAIM ANY IMPLIED WARRANTY THAT THE PREMISES ARE SUITABLE FOR TENANT'S INTENDED COMMERCIAL PURPOSE, AND TENANT'S OBLIGATION TO PAY RENT HEREUNDER IS NOT DEPENDENT UPON THE CONDITION OF THE PREMISES OR THE PERFORMANCE BY LANDLORD OF ITS OBLIGATIONS HEREUNDER, AND, EXCEPT AS OTHERWISE EXPRESSLY PROVIDED HEREIN, TENANT SHALL CONTINUE TO PAY THE RENT, WITHOUT ABATEMENT, DEMAND, SETOFF OR DEDUCTION, NOTWITHSTANDING ANY BREACH BY LANDLORD OF ITS DUTIES OR OBLIGATIONS HEREUNDER, WHETHER EXPRESS OR IMPLIED.

This Lease is executed on the respective dates set forth below, but for reference purposes, this Lease shall be dated as of the date first above written. If the execution date is left blank, this Lease shall be deemed executed as of the date first written above.

LANDLORD: MEADOWS OFFICE, L.L.C., a Delaware limited liability company

By: */s/ John Saracano Jr*
Name: John Saracano Jr
Title: Authorized Signatory
Execution Date: 10-9-07

TENANT: CANCER GENETICS, INC., a Delaware corporation

By */s/ Louis J. Maione*
Name: Louis J. Maione
Title: President
Execution Date: 9-28-07

EXHIBIT A

OUTLINE OF PREMISES

[Intentionally omitted.]

EXHIBITB

DESCRIPTION OF THE LAND

[Intentionally omitted.]

EXHIBIT C

ADDITIONAL RENT, TAXES, INSURANCE AND UTILITIES

[Intentionally omitted.]

EXHIBIT D

TENANT FINISH-WORK

[Intentionally omitted.]

EXHIBIT E

BUILDING RULES AND REGULATIONS

[Intentionally omitted.]

EXHIBIT F

FORM OF TENANT ESTOPPEL CERTIFICATE

[Intentionally omitted.]

EXHIBIT G

FORM OF LETTER OF CREDIT

[Intentionally omitted.]

EXHIBIT H

RENEWAL OPTION

[Intentionally omitted.]

EXHIBIT I

GUARANTY

[Intentionally omitted.]

Exhibit 10.45

FIRST AMENDMENT TO LEASE

THIS FIRST AMENDMENT TO LEASE (the **"Amendment")** is entered into this 30 day of October, 2017 (the **"Effective Date"),** between MEADOWS LANDMARK LLC, a Delaware limited liability company **("Landlord"),** and CANCER GENETICS, INC., a Delaware corporation **("Tenant").**

Landlord and Tenant are parties to a certain Office Lease Agreement dated October 9, 2007 (the **"Lease")** between Landlord's predecessor-in-interest Meadows Office, L.L.C. **("MOLLC") and** Tenant, covering an area (the **"Premises")** deemed to contain 17,936 rentable square feet on the second (2nd) floor, located in the building commonly known as Building 201 of the Meadows Office Complex, whose street address is 201 Route 17 North, Rutherford, New Jersey (the **"Building ").**

Landlord has succeeded to the rights and interests of MOLLC as landlord under the Lease.

The Expiration Date (as defined in the Lease) of the Lease is February 28, 2018.

Landlord and Tenant desire (i) to extend the Term (as defined in the Lease) of the Lease, and (ii) to otherwise amend certain terms and provisions of the Lease, subject to and in accordance with the terms and conditions set forth in this Amendment.

In consideration of the foregoing and of the mutual promises contained in this Amendment, and for other good and valuable consideration the receipt and sufficiency of which is acknowledged by Landlord and Tenant, and intending to be legally bound hereby, Landlord and Tenant agree as follows:

1. The New Work. Following the execution and delivery of this Amendment by Landlord and Tenant, Tenant shall perform Alterations (as defined in the Lease) required by Tenant for Tenant's continued use and occupancy of the Premises (the **"New Work"),** in accordance with Section 8(a) of the Lease. The plans and specifications to be submitted by Tenant to Landlord for approval of the proposed New Work shall include complete and coordinated working, finished and detailed mechanical, engineering and construction drawings and specifications for the New Work (the **"MEPs").** The MEPs shall include adequate detail of all existing and proposed systems serving the Premises, including but not limited to HVAC. Tenant shall also provide to Landlord, with the MEPs, an inventory or schedule of all equipment and systems currently in the Premises and to be located in the Premises following completion of the New Work, and will update said inventory/schedule at any time that additional equipment and/or systems are installed the Premises during the Term. The MEPs for the HVAC systems and equipment serving the Premises shall take into account all such existing and proposed systems and equipment and their impact on HVAC requirements and performance in the Premises. During the performance of the New Work (but not more frequently than once per calendar month) and upon substantial completion thereof, provided no Event of Default (as defined in the Lease) is then in existence under the Lease (as amended by this Amendment), and provided no construction liens have been filed in connection with the New Work, within thirty (30) days after presentation to Landlord of the items described below with respect to each draw, Landlord shall pay out of the Tenant's Allowance (as hereinafter defined) (up to an aggregate total amount equal to Landlord's NW Cost Obligation (as hereinafter defined)) for Tenant's NW Costs (as hereinafter defined) theretofore incurred. Each draw against the Tenant's Allowance shall be limited to the proportion that Landlord's NW Cost Obligation bears to the total Tenant's NW Costs (as reasonably estimated by Landlord until such time as the actual amount of Tenant's NW Costs shall have been determined) ("**Landlord's NW Cost Proportion**"), times the amount then payable to the contractor(s) performing the New Work. In addition, at no time shall the total amount drawn against the Tenant's Allowance exceed Landlord's NW Cost Proportion of the total of all monies paid through the current draw to the contractor(s) performing New Work. All draws against the Tenant's Allowance paid prior to the final draw shall be reduced by a ten percent (10%) retainage (which retainage shall be payable as part of the final draw). The final draw of Tenant's Allowance shall not be paid until issuance of a certificate of occupancy (if required by the Borough of Rutherford) for the New Work and delivery to Landlord of Auto-CAD as-built drawings of the completed New Work. For purposes of this Section 1, (i) "**Tenant's NW Costs**" shall mean actual out-of-pocket hard and soft construction costs incurred by Tenant in connection with the New Work, including permit and inspection fees and other costs associated with obtaining necessary permits and approvals and costs of materials and labor used in construction of the New Work, (ii) "**Landlord's NW Cost Obligation**" shall mean the sum of (a) the Tenant's Allowance less (b) the fee payable to Landlord's Construction Manager (as defined in the Lease) pursuant to Section 8(a) of the Lease, and (iii) "**Tenant's Allowance**" shall mean the amount of $269,040.00. Notwithstanding the foregoing, Landlord's obligation under this Section 1 to pay Tenant's NW Costs out of the Tenant's Allowance shall be applicable only to Tenant's NW Costs for New Work completed (and draws submitted therefor) prior to January 1, 2019. Items to be delivered to Landlord with respect to each draw against Tenant's Allowance shall include (i) an application for payment and sworn statement of contractor substantially in the form of AIA Document G-702, Application and Certificate for Payment, covering all work for which disbursement is to be made to a date specified therein; (ii) a certification from an AIA architect substantially in the form of the Architect's Certificate for Payment which is located in said Document G-702; (iii) contractors', subcontractors' and material suppliers' waivers of liens covering all of the New Work for which payment is requested; (iv) a cost breakdown for each trade or subcontractor performing the New Work; (v) copies of all construction contracts for the New Work, with copies of all change orders, if any; and (vi) a request to disburse executed by Tenant containing an approval by Tenant of the theretofore completed New Work. Tenant shall schedule and coordinate the performance of the New Work with Landlord so as to minimize disruption with operations of other tenants at the Building and Building operations. Landlord and Tenant acknowledge that Tenant intends to commence the New Work prior to the Extension Term Commencement Date (as defined below).

2. Extension of Term. The Term is hereby extended for a period (the "**Extension Term**") commencing March 1, 2018 (the "**Extension Term Commencement Date**"), and expiring on February 28, 2023. The Expiration Date is hereby amended to mean February 28, 2023 (unless sooner terminated in accordance with the Lease, as amended by this Amendment).

3. Base Rent.

(a) Tenant shall continue to pay to Landlord Base Rent (as defined in the Lease) for the Premises through February 28, 2018, in accordance with the terms of the Lease.

(b) From and after March 1, 2018, Tenant shall pay to Landlord Base Rent for the Premises at the following rates for and during the following periods:

Rental Period	Annual Base Rent per Rentable Square Foot	Annual Base Rent	Monthly Installment of Annual Base Rent
3/1/2018 - 2/28/2019	$ 29.50	$ 529,112.04	$ 44,092.67
3/1/2019 - 2/29/2020	$ 30.00	$ 538,080.00	$ 44,840.00
3/1/2020 - 2/28/2021	$ 30.50	$ 547,047.96	$ 45,587.33
3/1/2021 - 2/28-2022	$ 31.00	$ 556,016.04	$ 46,334.67
3/1/2022 - 2/28/2023	$ 31.50	$ 564,984.00	$ 47,082.00

4. Additional Rent/Taxes. With respect to all periods from and after March 1, 2018, the Base Year (as defined in the Lease) shall mean the calendar year 2018.

5. HVAC. Notwithstanding the provisions of clause (ii) of Section 7(a)(i) of the Lease**("Landlord's Building-Standard HVAC Obligation"),** Landlord and Tenant acknowledge and agree:

(i) That Tenant's use of the Premises is not normal office use, but includes medical laboratory use requiring supplemental HVAC service beyond the Building standard HVAC service required to be provided by Landlord under the Lease for normal office use;

(ii) That the internal air handling, distribution and control of HVAC within the Premises (including but not limited to supplemental HVAC units and equipment (the **"Existing HVAC Equipment")** was designed and installed by Tenant as part of the Tenant's Initial Alterations (as defined in the Lease) under the Lease;

(iii) That all HVAC work performed as part of the New Work will be performed in accordance with Tenant's plans and specifications therefor (any HVAC equipment installed as part of the New Work, together with the Existing HVAC Equipment, being herein referred to together as **"Tenant's HVAC Equipment")**;

(iv) That Tenant shall be solely responsible for the maintenance and repair of Tenant's HVAC Equipment, and shall, as part of such maintenance and repair, ensure that all of Tenant's HVAC Equipment (and any other systems or equipment serving the Premises having an impact on heating, cooling and air quality in the Premises or any other portions of the Building) is properly filtered and vented to the exterior of the Building, in accordance with all applicable legal requirements and Building standards; and

(v) That Landlord's sole obligation with respect to the provision of HVAC to the Premises is to supply heated and refrigerated air at the entry of the portion of the Building HVAC system serving the Premises into the connection with Tenant's HVAC Equipment in such amounts and at such temperatures as would be adequate to heat and cool the Premises in accordance with Landlord's Building-Standard HVAC Obligation if the Premises consisted solely of normal office space containing HVAC ducts, air handlers and controls consistent with Landlord's Building-standard specifications (it being specifically understood and agreed that in no event shall Landlord be responsible for the failure of Tenant's HVAC Equipment to perform in accordance with its design specifications due to the design, installation, operation or performance thereof).

6. Security Deposit.

(a) The amount of the Security Deposit (as defined in the Lease) to be held by Landlord under the Lease is hereby increased from its current amount of $300,000.00 to $350,000.00 (to be maintained in such amount throughout the Term, as the same may be extended or renewed). Tenant shall, simultaneously with Tenant's execution of this Amendment, deliver to Landlord a replacement Letter of Credit (as defined in the Lease) in such increased amount of the Security Deposit, whereupon Landlord shall surrender to Tenant the existing Letter of Credit currently held by Landlord under the Lease.

(b) The second (2nd) subparagraph of Section 6 of the Lease is deleted in its entirety.

7. Termination Option. Provided the Lease, as amended by this Amendment, shall then be in full force and effect, and provided no Event of Default then exists under the Lease, as amended by this Amendment, Tenant shall have the one-time-only option to terminate the Term (the **"Termination Option")** as of March 31, 2021 (the **"Early Termination Date").** The Termination Option shall be exercised only by Tenant delivering to Landlord not later than twelve (12) months prior to the Early Termination Date (time being of the essence):

(i) Written notice of Tenant's exercise of the Termination Option **("Tenant's Termination Notice");** and

(ii) A termination fee (the **"Termination Fee")** (which Termination Fee shall be payable in addition to, and not in substitution of, any other Rent payable by Tenant under the Lease), in an amount equal to $188,185.38.

Provided Tenant timely and properly exercises the Termination Option described in this Section 7 in the manner set forth above, the Term shall expire at 11:59 p.m. on the Early Termination Date, and such early termination date shall become the Expiration Date for all purposes of the Lease, as amended by this Amendment. If Tenant fails to timely and properly exercise the Termination Option described in this Section 7 in the manner set forth above, the Termination Option shall be null and void.

8. No Renewal Option. Landlord and Tenant acknowledge and confirm that the Renewal Option (as defined in the Lease) provided under Exhibit H attached to the Lease is hereby deleted in its entirety.

9. Broker. Tenant represents and warrants to Landlord that Tenant has not dealt with any party to whom a commission might be owing in connection with this Amendment, except for Cushman & Wakefield of New Jersey, Inc., and Colliers International (together, **"Broker"),** and shall indemnify, defend and hold harmless Landlord from and against the claim of any party other than Broker claiming a commission owing due to its dealings with Tenant in connection with this Amendment. Landlord shall pay any commission payable to Broker in connection with this Amendment under a separate agreement or agreements, and shall indemnify, defend and hold harmless Tenant from any claim and/or cause of action by Broker for any commission payment or similar claim.

10. Removal of Alterations. Notwithstanding anything to the contrary set forth in Sections 8(a) and 21 of the Lease regarding Tenant's obligation to remove Alterations at the end of the Term (or the Extension Term), such obligation shall extend only to Alterations made by Tenant or Landlord at Tenant's request in or to the Premises of a "non-office" nature, including in any event, but not limited to, lab benches, supplemental air conditioning equipment, specialized appliances, and any other lab related equipment (collectively, **"Specialty Alterations").** However, if Tenant is notified by Landlord to the contrary not less than six (6) months prior to the Expiration Date, Tenant shall deliver possession of the Premises to Tenant with the Specialty Alterations, to the extent designated by Landlord, remaining in the Premises.

11. Miscellaneous. If there is any conflict between the terms and provisions of the Lease and the terms and provisions of this Amendment, the terms and provisions of this Amendment shall prevail. Landlord and Tenant ratify and affirm the Lease as modified by this Amendment. Except as modified by this Amendment, the Lease shall remain unmodified, in full force and effect. Except as herein otherwise expressly provided, or except as the terms of the Lease may be in conflict with or inconsistent with the terms of this Amendment, all of the terms, covenants and provisions of the Lease are hereby incorporated into and made a part of this Amendment as if fully set forth herein. Tenant represents that, as of the date hereof, it has no defenses or accrued offsets under the Lease and, to Tenant's actual knowledge, Landlord is not in default of its obligations under the Lease.

[BALANCE OF THIS PAGE INTENTIONALLY LEFT BLANK- SIGNATURE PAGE TO FOLLOW]

IN WITNESS WHEREOF, Landlord and Tenant have executed this Amendment on the day and year first above written.

WITNESS/ATTEST

MEADOWS LANDMARK LLC,
a Delaware limited liability company

By: */s/ Barbara A. Carley*
Print name and title: Barbara A. Carley
Authorized Person

CANCER GENETICS, INC.,
a Delaware corporation

By */s/ John A. Roberts*
Print name and title John A. Roberts, COO

Exhibit 10.46

CONSENT TO ASSIGNMENT

This Consent to Assignment (this "**Agreement**") is executed as of July 19, 2019, between **Meadows Landmark LLC,** a Delaware limited liability company ("**Landlord**"), **Cancer Genetics, Inc.,** a Delaware corporation ("**Assignor**"), **Interpace BioPharma**, **Inc.**, a Delaware corporation ("**Assignee**").

RECITALS:

A. Assignor is the tenant under a certain Office Lease Agreement, dated October 9, 2007, between Meadows Office, L.L.C. ("**MOLLC**"), as landlord, and Assignor, as tenant, as amended by a certain First Amendment to Lease, dated October 30, 2017, between Landlord (successor to MOLLC), as landlord, and Assignor, as tenant (collectively, the "**Lease**").

B. Assignor desires to assign unto Assignee all of Assignor's rights, title and interest as tenant in and to the Lease, and Assignee desires to accepts such assignment and to assume and be bound by and to perform all duties and obligations as tenant under the Lease. Assignor and Assignee have requested that Landlord consent to such assignment and assumption (the "**Assignment**"), and Landlord has agreed thereto, subject to and in accordance with the terms and conditions contained herein.

AGREEMENTS

For valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. **Consent**. Subject to and in accordance with the terms and conditions contained in this Agreement, Landlord hereby consents to the Assignment and waives any applicable termination or other rights under the Lease arising solely in connection with the Assignment. The Assignment shall be effectuated pursuant to an assignment of lease between Assignor and Assignee, the exact form of which is attached hereto as Exhibit A (the "**Assignment**"). Landlord's consent contained herein shall not waive its rights as to any subsequent assignment, sublease or other transfer. Landlord hereby asserts that that, to Landlord's actual knowledge, the Lease is in full force and effect and acknowledges that, upon receipt by Landlord of the full amount of the outstanding rent as set forth in Section 4 of the Assignment (and any additional amounts of rent becoming due under the Lease prior to the date of Landlord's execution and delivery of this Agreement), there is no default of Assignor under the Lease which has remained uncured after any applicable period for notice and cure and no circumstance or set of circumstances exists (including the Assignment) which, with the giving of notice or the passage of time, or both, would constitute a default under the Lease.

2. **No Obligations Created**. Each of the parties to this Agreement agree and acknowledge that Landlord shall have no obligation or liability under the terms of the Assignment. Without limiting the generality of the foregoing, Landlord shall have no liability (and shall not be bound by) any modifications, deletions or waivers of any provision of the Lease which Landlord has not agreed to specifically in writing.

3. **Condition of Premises**. Landlord makes no representations or warranties, express or implied, concerning the condition of the Premises (as defined in the Lease) and Assignee accepts the Premises in their "as-is" condition as of the effective date of the Assignment.

4. **Guaranty**. In order to induce Landlord to enter into this Agreement, and in consideration of Landlord's entering into this Agreement, the full and faithful keeping, performance and observance of all the covenants, agreements, terms, provisions and conditions of the Lease provided to be kept, performed and observed by the tenant thereunder (expressly including, without being limited to, the payment as and when due of the Base Rent (as defined in the Lease) and additional Rent (as defined in the Lease) payable by the tenant under the Lease) and the payment of any and all other damages for which the tenant under the Lease shall be liable by reason of any act or omission contrary to any of said covenants, agreements, terms, provisions or conditions is being guaranteed by Interpace Diagnostics Group, Inc. ("**Guarantor**"), by the execution by Guarantor of the Guaranty attached to and made a part of the Assignment as Exhibit B (the "**Guaranty**"). Assignor and Assignee confirm and acknowledge that Landlord would not have entered into this Agreement but for the giving of the Guaranty by Guarantor.

5. **Brokerage**. In no event shall Landlord be liable for any leasing or brokerage commission with respect to the Assignment or the negotiation and execution of the Assignment or this Agreement. Assignor and Assignee shall each jointly and severally indemnify, defend and hold Landlord harmless from and against all costs, expenses, attorney's fees and other liability for commissions or other compensation claimed by any broker or agent claiming the same by, through or under the indemnifying party with respect to the Assignment or this Agreement.

6. **Landlord's Costs**. Assignee shall, upon delivery of an invoice therefor; reimburse Landlord for all of Landlord's costs and expenses (including legal fees incurred by Landlord) incurred in connection with the Assignment and this Agreement.

7. **Governing Law; Amendment; Entire Agreement**. This Agreement shall be governed by the laws of the State of New Jersey. This Agreement shall not be amended or modified except by an instrument in writing signed by all the parties hereto and this Agreement contains all of the agreements, understandings, representations and warranties of the parties with respect to the subject matter hereof.

8. **Counterparts**. This Agreement may be executed in multiple counterparts, each of which shall constitute an original, but all of which shall constitute one document. Such counterparts may be transmitted electronically and any such electronically transmitted counterparts shall be deemed to be an original executed counterpart.

[SIGNATURE PAGE FOLLOWS]

EXECUTED as of the date first written above.

LANDLORD: MEADOWS LANDMARK LLC, a Delaware limited liability company

By: */s/ John H. Rooser*
Name: John H. Rooser
Title: Authorized Person

ASSIGNOR: CANCER GENETICS, INC., a Delaware corporation

By: */s/ John A. Roberts*
Name: John A. Roberts
Title: President & CEO

ASSIGNEE: INTERPACE BIOPHARMA, INC., a Delaware corporation

By: */s/ Jack Stover*
Jack Stover
President and Chief Executive Officer

[Signature Page to Cancer Genetics, Inc. Consent to NJ Lease Assignment]

EXHIBIT A

Lease Assignment

[Intentionally omitted]

EXHIBIT B

Form of Guaranty

[Intentionally omitted]

EXHIBIT C

Form of Consent to Assignment

[Intentionally omitted]

Exhibit 10.47

SOUTHPORT - GENTRIS CORPORATION

LEASE OF SECOND GENERATION SPACE IN A SINGLE STORY FLEX BUILDING

Revised: 05/27/04
06/29/04
07/06/04
07/07/04
07/09/04

LEASE AGREEMENT

NORTH CAROLINA
WAKE COUNTY

SINGLE STORY
FLEX BUILDING

THIS LEASE AGREEMENT ("Lease"), is made and entered into as of the

12rh day of June, 2004
by and between

SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
hereinafter referred to as "Landlord"

AND

GENTRIS CORPORATION

a **Delaware Corporation**
hereinafter referred to as "Tenant"

STATEMENT OF PURPOSES

Landlord is the owner of Southport Business Park, an office, research and development and distribution park located in the Town of Morrisville, Wake County, North Carolina ("Property"). Landlord and Tenant have agreed that Landlord shall lease to Tenant and Tenant shall lease from Landlord certain space located at **133 Southcenter Court, Suite 400**, Morrisville, North Carolina 27560 and have agreed to enter into this Lease to evidence the terms and conditions of the leasing of the space by Landlord to Tenant.

NOW, THEREFORE, in consideration of the foregoing and the mutual covenants, conditions and agreements herein contained and other good and valuable consideration the receipt and sufficiency of which are mutually acknowledged, Landlord and Tenant hereby agree as follows:

ARTICLE 1
BASIC PROVISIONS

SECTION 1.01. - THE DEMISED PREMISES

Subject in all respects to the terms, conditions, agreements and limitations of this Lease, the Landlord hereby leases to Tenant and Tenant hereby leases from Landlord the following described space, hereinafter referred to as the "Demised Premises":

That area indicated as the Demised Premises on Exhibit A attached hereto and incorporated herein by reference, which contains approximately **Ten Thousand Two Hundred and Seven (10,207**) rentable square feet, herein referred to as the "Rentable Square Feet", as measured from the centerlines of all demising and exterior walls, and which is designated as Suite **400**. The Demised Premises are located in Building **Five (5)**, Southport Business Park, herein referred to as the "Building". The lot on which the Building is located is referred to herein as the "Lot".

~~1.01.1 - INTERIOR HALLWAY~~ Intentionally Deleted

SECTION 1.02. - TERM OF THE LEASE

Subject in all respects to the terms, limitations, conditions and agreements contained herein, the term of this Lease (herein referred to as the "Term") shall commence on the earlier of the date that the Tenant takes possession of any part of the Demised Premises or **October 1,2004** (the "Target Completion Date"), whichever first occurs, and shall terminate (unless extended as herein provided) at 11:59 p.m. on **January 31, 2010**.

Landlord and Tenant agree to sign a statement in the form attached hereto as Exhibit F (the "Acceptance of Demised Premises Memorandum") confirming the actual date on which the Term begins (herein referred to as the "Commencement Date") as soon as it is determined.

If no Acceptance of Demised Premises Memorandum is executed by both Landlord and Tenant, the Commencement Date shall be the earlier of (i) the date on which Tenant takes possession of any part of the Demised Premises; or (ii) the Target Completion Date.

If Tenant remains in possession of the Demised Premises after the end of the Term or any renewal or extension thereof with Landlord's consent but without a new lease reduced to writing and duly executed, Tenant shall be deemed to be occupying the Demised Premises as a tenant from month-to-month only, but otherwise subject to all the covenants, conditions, and agreements of this Lease.

SECTION 1.03. - USE OF THE DEMISED PREMISES

Subject to the general limitations of Section 4.01 and to the terms, limitations, conditions and agreements contained herein, Tenant may use the Demised Premises for the following purposes but for none other without Landlord's prior written consent: **General offices, administration, research and development, product packaging, storage and shipping for a Pharmacogenomics company.**

SECTION 1.04. - RENT AND ADJUSTMENTS TO RENT

Each year during the Term of this Lease, Tenant shall pay rent ("Minimum Annual Rent") to the Landlord in equal consecutive monthly installments ("Monthly Minimum Rent") due on the first day of each calendar month, without demand, deduction or setoff, payable to Landlord at 101 Southcenter Court, Suite 1100, Morrisville, North Carolina 27560.

For the first year of the Term of this Lease, Tenant shall pay to Landlord Minimum Annual Rent in the amount of **One Hundred Thousand Eight Hundred Forty Five and 16/100** Dollars **($100,845.16).** which is calculated based on Rentable Square Feet times **$9.88.**

For each year after the first year of the Term of this Lease, Tenant shall pay to Landlord Minimum Annual Rent in an amount equal to **102.5%** of the previous year's Minimum Annual Rent.

The following chart sets forth the Minimum Annual Rent, the Monthly Minimum Rent, and the rental rate per rentable square foot for each year during the Term of this Lease:

	Minimum Annual Rent	Monthly Minimum Rent	Annual Rent Per Rentable Square Foot
Year 1 (**10/01/04** through **9/30/05**)	**N/A**	**$ 8,403.76**	**$ 9.88**
Year 2 (**10/1/05** through **9/30/06**)	**$ 103,396.91**	**$ 8,616.41**	**$ 10.13**
Year 3 (**10/1/06** through **9/30/07**)	**$ 105,948.66**	**$ 8,829.06**	**$ 10.38**
Year 4 (**10/1/07** through **9/30/08**)	**$ 108,602.48**	**$ 9,050.21**	**$ 10.64**
Year 5 (**10/1/08** through **9/30/09**)	**$ 111,358.37**	**$ 9,279.86**	**$ 10.91**
Partial Year (10/1/09 through 1/31/10)	**N/A**	**$ 9,509.52**	**$ 11.18**

If the Term commences on any day other than the first day of a calendar month, then the Tenant shall pay, on or before the Commencement Date, rent to Landlord for the initial partial month (being the period from the Commencement Date through the end of that month), equal to the Monthly Minimum Rent for the first year of the Term of this Lease, divided by thirty (30) and multiplied by the number of days remaining in the month, beginning with the Commencement Date and ending with the last day of the calendar month in which the Commencement Date occurs.

SECTION 1.05. - COST OF LIVING INCREASE ***Intentionally Deleted***

SECTION 1.06. - RENT ABATEMENT

No Monthly Minimum Rent shall be due for the following months (the "Abatement Months"): **Effective the Commencement Date of this Lease the first four (4) months of the Lease** Tenant shall pay all Additional Rent (as hereafter defined) for the Abatement Months. The entire Monthly Minimum Rent otherwise due and payable for the Abatement Months shall become immediately due and payable upon the occurrence of an Event of Default by the Tenant under this Lease.

SECTION 1.07. - SECURITY DEPOSIT

In lieu of a security deposit, Tenant has delivered to Landlord a letter of credit in the amount of $114,000.00 which shall be held by Landlord as security for the performance by Tenant of each of its obligations hereunder. The requirements for the letter of credit and the terms and conditions relating to the letter of credit are more particularly set forth in Section 6 of Exhibit C attached hereto and incorporated herein by reference.

~~Tenant hereby agrees to pay to Landlord with or prior to the execution of this Lease the sum of~~**~~Eight Thousand Four Hundred and Three and 76/100~~** ~~DOLLARS ($~~**~~8,403.76~~**~~) (hereinafter referred to as the "Security Deposit"), which sum Landlord shall retain as security for the performance by Tenant of each of its obligations hereunder. Such Security Deposit shall be held, applied and refunded in the manner and subject to the conditions hereinafter provided.~~

SECTION 1.08. - PAYMENT OF RENTS, LATE PAYMENT, NON-PAID CHECK

The covenant of Tenant to pay rents is and shall be independent of any and all other covenants of this Lease and all rents shall be payable in legal tender of the United States of America for the payment of public or private debts.

In addition to such remedies as may be provided under Article 12, Default by Tenant and Landlord's Remedies, Landlord shall be entitled to, as further Additional Rent, a late charge of two (2%) per cent of any amount due hereunder, if not received within five (5) days of when due, and a charge of two *(2%)* per cent of any amount due hereunder, for any check given by Tenant not paid when first presented to the financial institution on which the check is drawn. In addition, in the event the Tenant fails to pay any amount due hereunder including, but not limited to any Monthly Minimum Rent; Additional Rent, or other monetary payment as and when provided in this Lease (which shall include a failure to pay by reason of the failure to honor any check), the Tenant shall pay to the Landlord as Additional Rent, interest daily on the unpaid amount at the annual rate of four (4%) per cent in excess of the prime interest rate from time to time in effect, by CitiBank N.A., New York, New York. Any payment by Tenant or acceptance by Landlord of a lesser amount than shall be due from Tenant to Landlord shall be treated as a payment on account. The acceptance by Landlord of a check for a lesser amount with an endorsement or statement thereon, or upon any letter accompanying such check, that such lesser amount is payment in full shall be given no effect, and Landlord may accept such check without prejudice to any other rights or remedies which Landlord may have against Tenant.

ARTICLE 2
ADDITIONAL RENT

SECTION 2.01. - SHARE OF DIRECT EXPENSES

The Tenant agrees to pay to Landlord, as Additional Rent, each year, Tenant's proportionate share of any Direct Expenses (as hereinafter defined) incurred by or accrued as an expense of Landlord or its agents on account of the operation or maintenance of the Building and Lot and all appurtenances thereto and including a portion of any charges attributable to Common Areas, as hereinafter defined, and an allocable portion of any and all other charges incurred by or accrued as an expense of Landlord in connection with the operation or maintenance of the Building and Lot; provided, however in the cases of expenses which benefit portions of Southport Business Park other than the Building and Lot, the portion allocated to the Building and Lot shall be based upon sound accounting principles adopted by the Landlord for the purpose of making a reasonable allocation.

Tenant's proportionate share of the total of all Direct Expenses allocable to the Building and Lot shall be calculated by dividing the Rentable Square Feet of the Demised Premises stated at Section 1.01 hereof by an amount which is equal to the rentable square feet of the Building. It is agreed that the rentable square feet of the Building is **Fifty Five Thousand Nine Hundred Forty Seven (55,947)** SQUARE FEET.

Notwithstanding the foregoing, in the event the usage of any utility, equipment or other Direct Expense by Tenant shall be determined by Landlord to be disproportionate to the amount of space leased by Tenant, the Landlord reserves the right to make an allocation of such Direct Expense to Tenant based upon actual usage by Tenant, as determined by Landlord in its sole discretion. Tenant agrees to pay such specially allocated amount in the event Landlord determines such usage is disproportionate and so advises Tenant.

The term "Direct Expense" as used herein, shall include all direct costs of operation and maintenance as determined by Generally Accepted Accounting Principles ("GAAP") and shall include without limitation the following: building supplies; ad valorem real and personal property taxes and other governmental charges; utility and service charges attributable to Common Areas or paid by Landlord; property, casualty, liability and other insurance premiums; deductibles paid in connection with any insurance policies; repairs, reserves for major repairs, maintenance and service contracts for the Building, Common Areas and all related mechanical equipment; property management charges; grounds maintenance; security; removal of snow and ice; parking maintenance and striping; landscaping; and all other similar costs and expenses.

If the State of North Carolina or any political subdivision thereof or any governmental or quasi- governmental authority having jurisdiction over the Building and Lot should specifically impose a tax, assessment, charge or fee or specifically increase a then existing tax, assessment, charge or fee, which Landlord shall be required to pay, either by way of substituting for said real estate taxes or assessed against the Building or Lot, or in addition thereto, or impose an income or franchise tax or tax on rents in substitution for a general tax levied against the Building or Lot, or an addition thereto, such taxes, assessments, charges or fees shall be deemed to constitute a real property tax hereunder to the extent said taxes are in substitution therefore or in addition thereto. A copy of tax bills or assessment bills submitted by Landlord to Tenant shall at all times be sufficient evidence of the amount of taxes and/or assessments levied or assessed against the property to which such bill relates. Landlord's reasonable expenditures for attorney's fees, appraiser's fees, consultant's fees and other costs incurred during the Term of this Lease without regard to the tax year involved, in any efforts by Landlord to minimize ad valorem personal and real property taxes, and other governmental charges, which rights are reserved to Landlord, shall be included in the definition of ad valorem real and personal property taxes and other governmental charges for the purposes of this Section. If Landlord should receive a refund of any such taxes or charges, the Tenant will share proportionately in same, after deduction for all of Landlord's expenses in obtaining any such refund. Landlord's and Tenant's obligations under this Section shall survive the expiration of the Term of this Lease.

The term "Direct Expense" shall not include any income tax of Landlord, **any capital expenditure by Landlord**, any depreciation on the Building or any depreciation on equipment therein, interest, or real estate broker's commission for any sale or for securing the execution of any lease.

Tenant may, at Tenant's expense, audit Landlord's records and all information pertaining to Direct Expenses in order to verify the accuracy of Landlord's determination of the Tenant's proportionate share provided that:

(i) Tenant must give notice to Landlord of its election to undertake said audit within Sixty (60) days after receipt of the Statement of Additional Rents (as hereinafter defined in Section 2.04);

(ii) Such audit will be conducted only during regular business hours at the office where Landlord maintains records of Direct Expenses and only after Tenant gives Landlord fourteen (14) days' advance written notice;

(iii) Tenant shall deliver to Landlord a copy of the results of such audit within fifteen (15) days of its receipt by Tenant No such audit shall be conducted by Tenant if any other tenant of the Building has conducted an independent audit for the time period Tenant intends to audit and Landlord furnishes to Tenant a copy of such audit as long as such audit was conducted by an independent auditor reasonably satisfactory to Tenant;

(iv) No audit shall be conducted at any time that Tenant is in monetary default of any of the terms of this Lease or at any time that a non-monetary Event of Default (as hereinafter defined) exists;

(v) No subtenant or assignee shall have any right to conduct an audit;

(vi) Such audit review by Tenant shall not postpone or alter the liability and obligation of Tenant to pay any amounts due under the terms of this Lease pending resolution of any contest arising from the audit; and

(vii) Such audit shall be conducted by an independent, licensed accountant who is not compensated on a contingency fee basis.

Within thirty (30) days after Tenant's receipt of such audit, Tenant must give notice to Landlord of any disputed amounts and identify all items contested in Landlord's Statement of Additional Rents. If Landlord and Tenant cannot agree upon any such item as to which Tenant shall have given such notice, the dispute shall be resolved by an audit, by a major accounting firm mutually acceptable to Landlord and Tenant and the cost of said audit shall be paid by the non-prevailing party; provided however, Tenant will not be considered the "prevailing party" for purposes of this paragraph unless the accounting firm's audit reveals an overcharge by Landlord in excess of twenty percent (20%) of the Tenant's proportionate share for the particular calendar year in question.

Any adjustment required as a result of any audit shall be paid by the party who owes the adjustment within thirty (30) days of the owing party's receipt of the audit.

SECTION 2.02. - ADDITIONAL RENT - CERTAIN TAXES

Tenant shall further pay as Additional Rent any sales or use tax imposed on rents due from Tenant (other than City, State or Federal Income Tax), and to the fullest extent lawful, any tax on rents in lieu of ad valorem taxes on the Building or Lot, even though laws imposing such taxes attempt to require Landlord to pay the same.

SECTION 2.03 - NOTICE

Landlord shall, **prior to April 1 of each year** ~~from time to time~~ send to Tenant, in writing, a statement of the amount of any of ~~Cost of Living Increase,~~ Tenant's share of Direct Expenses and any applicable taxes or rents payable by Tenant **for the prior calendar year** under Sections 2.01, 2.02, or 2.03 hereof **(the "Statement of Additional Rents")**.

SECTION 2.03. - PAYMENT IN ADVANCE

Tenant shall pay to Landlord each month, one twelfth (1/12) of the amounts, if any, reasonably computed by Landlord to be Tenant's anticipated annual charges for Additional Rent, in anticipation of Additional Rent due for the then current calendar year and all such monthly payments shall be applied to Tenant's Additional Rent for the then current calendar year. **Should the Statement of Additional Rents show that Tenant's share of Direct Expenses differ from Landlord's estimate for the previous year, then the Landlord shall reimburse Tenant any overpaid amounts, or Tenant shall reimburse Landlord *for* any underpaid amounts, within thirty (30) days after Tenant's receipt of the Statement of Additional Rents.**

SECTION 2.04. - OTHER CHARGES TO BE TREATED AS RENTS

All charges, costs and sums required to be paid by Tenant to Landlord hereunder other than Minimum Annual Rent, including without limitation the charges, costs and sums set forth in this Article, shall be considered "Additional Rent" and shall be collectible by and with the same rights held by the Landlord for the collection of rents.

ARTICLE 3
LANDLORD'S WORK

SECTION 3.01. - TENANT'S ACCEPTANCE OF PREMISES

Tenant represents to the Landlord that it has examined and inspected the Demised Premises and finds them to be as represented by the Landlord and satisfactory for Tenant's intended use **and, to Tenant's actual knowledge, free from existing violations of Section 4.02, subject to latent defects, to a punchlist agreed upon by Landlord and Tenant of items requiring repair by Landlord, and to Landlord's Work**. Tenant hereby accepts the Demised Premises "as is". Any additional improvements to be performed by Landlord are separately identified in Exhibit B-2.

SECTION 3.02. - SCOPE OF LANDLORD'S WORK

Landlord shall, at its own expense, perform the additional work described as "Landlord's Work" in EXHIBIT B-2 attached hereto and made *a* part hereof. It is expressly understood and agreed that Landlord's obligation with respect to construction of the Demised Premises shall be limited to the scope of work described as Landlord's Work in EXHIBIT B-2 and shall in no event include any work not described on EXHIBIT B-2 and shall not include the performance, procurement and/or installation of any other work, fixtures or equipment. At Landlord's option, all Landlord's Work shall constitute improvements to the Demised Premises and remain the property of the Landlord upon expiration of the Term of the Lease.

SECTION 3.03. - NOTICE OF COMPLETION OF LANDLORD'S WORK

Landlord shall notify Tenant upon completion of Landlord's Work. **Landlord and Tenant shall inspect the Landlord's Work once completed and prepare a punchlist of items requiring repair which Landlord shall complete within thirty (30) days**. ~~The Demised Premises shall be deemed "ready for occupancy" under the terms of this Lease if Landlord has substantially completed, in accordance with Exhibit B-2 attached hereto, Landlord's Work which can be accomplished prior to and independently of any construction or installation required to be performed by Tenant. The occupancy or use by the Tenant of any of the improvements which are a part of Landlord's Work shall be deemed conclusive evidence that Landlord's Work has been substantially completed in accordance with EXHIBIT B-2.~~

~~The failure by Tenant to give notice within thirty (30) days of the delivery of possession of the Demised Premises specifying in detail those items of Landlord's Work which are not then complete shall be deemed conclusive evidence that Tenant has accepted the Demised Premises with all items of Landlord's Work completed.~~

SECTION 3.04. - TARGET COMPLETION DATE

The Landlord shall **make commercially reasonable best efforts** ~~exercise reasonable care~~ to cause the Landlord's Work at the Demised Premises to be substantially complete on or prior to the **date ninety (90) days after the Target Completion Date.** The parties confirm and agree that the completion of Landlord's Work may be delayed for reasons beyond the Landlord's control, including those reasons commonly known as Force Majeure, and hereby agree that the Target Completion Date shall automatically be extended if and to the extent that any delays are encountered which are not within the control of the Landlord. Notwithstanding the foregoing, in the event Landlord's Work is not completed within ~~NINETY (90)~~ **Forty-Five (45)** days following the **Latest** ~~Target~~ Completion Date, then **Tenant shall have the option to terminate this Lease**. ~~This Lease Agreement shall automatically become null and void and neither party hereby shall have any further rights or obligations~~ hereunder. Under no circumstances shall Landlord be liable to Tenant for any damages including, but not limited to direct, indirect, and consequential or incidental damages, which may be caused by any delay in commencing or completing its construction of the Demised Premises or for a total failure to complete same.

ARTICLE 4
USE OF THE PROPERTY BY THE TENANT

SECTION 4.01. - USE GENERALLY

Tenant may use the Demised Premises for the purposes stated in Section 1.03 hereof but for none other without Landlord's prior written consent, provided, however, notwithstanding the generality of the foregoing, in no event shall Tenant make any use of the Demised Premises, the Lot, the Building or the Common Areas which is in violation of any applicable laws, ordinances, statutes, rules or regulations affecting the Demised Premises, the Lot, the Building or the Common Areas, including without limitation general rules and regulations proscribed from time to time by Landlord for the use of the Demised Premises, the Lot, the Building or the Common Areas and restrictions with respect to employee parking in designated employee parking areas as may be developed from time to time by Landlord and delivered to Tenant or posted on the Lot or Building insofar as they might relate to Tenant's use and occupancy of the Demised Premises, nor may Tenant make any use of the Demised Premises not permitted by any present or future lawful restrictive covenants which apply to the Demised Premises, or which is or might constitute a nuisance, or which increases the property, casualty or other insurance premiums (or makes any such insurance unavailable to Landlord or other tenants) on the Lot and Building.

Tenant shall not permit its contractors, agents, employees, guests or invitees to place excessive loads on the parking lots and drives.

Tenant shall not permit its contractors, agents, employees, guests or invitees to place excessive loads on the floors of the Building. The maximum load shall not exceed Eight Hundred (800) pounds per square foot.
The Tenant will indemnify Landlord, it agents and employees, and will defend and hold Landlord, it's agents and employees, harmless from and against any and all loss, cost, damage, liability, claim, cause of action, judgment or expense, including without limitation reasonable attorney's fees and expenses, resulting or arising from Tenant's use of the Demised Premises the Lot, the Building, the Common Areas or the Property, whether caused by Tenant or by its agents, servants, employees, independent contractors, invitees or licensees, including without limitation any and all claims and causes of action against, and any and all damages, liabilities, losses, costs or expenses, incurred by the Landlord and arising out of or in any way connected with the application to the Demised Premises of any current or future legislation relating to the presence of any oil, hazardous substances, or waste materials upon the Demised Premises, the Lot, the Building, or the Property. Tenant shall maintain and care for its personal property on the Demised Premises, insure the same and shall neither have nor make any claim against Landlord for any loss or damage to the same.

Tenant shall not allow any animals in the Demised Premises, the Lot, the Building, or the Property other than "seeing eye" dogs that are trained for and engaged in the assistance of one or more visually impaired individuals. Tenant shall not allow unusual odors, noise, vibration, or dust to emanate from the Demised Premises. Tenant shall not allow cooking in the Demised Premises other than by household type microwave.

SECTION 4.02. - HAZARDOUS WASTE AND RELATED MATTERS

The Tenant shall not permit any violation to exist under any federal, state or local laws, rules and regulations now or hereafter in effect with respect to oil, hazardous wastes or hazardous materials, or toxic substances, or the release or disposal thereof with respect to *(i)* the Building, the Common Areas or the Property which is caused by or in control of Tenant or Tenant's agents, employees, contractors, guests, or invitees or (ii) the Demised Premises, **which violation results from the activities of Tenant, its employees, agents, guests, licensees, or invitees**. Tenant shall not use all **o r** any portion of the Demised Premises, Building, Common Areas or Property for the generation, storage, treatment, use or disposal of any substance for which a license or permit is required by applicable North Carolina, federal or local laws, regulations or ordinances, without the prior written consent of the Landlord. The Tenant shall pay all such sums and take all such actions as may be required to avoid or discharge the imposition of any lien on (i) the Building, the Lot, the Common Areas or the Property which results from any act or circumstances caused by or in the control of Tenant or (ii) the Demised Premises.

(a) Neither the Tenant nor its contractors, agent, employees, guests or invitees shall:

(i) generate (except with the proper written consent of the Landlord and in compliance with all laws, ordinances, and regulations pertaining thereto), or dispose of any hazardous material or oil on the Demised Premises, Lot, Building, the Common Areas or Property,
(ii) store (except with the prior written consent of Landlord and in compliance with all laws, ordinances, and regulations pertaining thereto), or dispose of any hazardous material or oil on the Demised Premises, Lot, Building, Common Areas or Property; or
(iii) directly or indirectly transport or arrange for the transport of any hazardous material or oil (except with the prior written consent of the Landlord and in compliance with all laws, ordinances, and. regulations pertaining thereto); on the Demised Premises, Lot, Building, Common Areas or Property.

(b) The Tenant shall indemnify Landlord and Landlord's agents and employees, and defend and hold the Landlord, its agents and employees harmless for, from, and against any claim or cause of action brought or threatened against the Landlord by the Tenant, any guarantor or endorser of the obligation of Tenant, or any governmental agency or authority or any other person (as well as from attorneys' reasonable fees and expenses in connection therewith) and any loss, cost, damage, and liability incurred by the Landlord, **which results from the activities of the Tenant, its employees, agents, guests, licensees or invitees** ~~on account of~~ or because of the failure by the Tenant to comply with the terms and provisions of this Section 4.02 of this Lease. This indemnification and hold harmless agreement shall survive any termination of this Lease.

Failure of Tenant to comply with any provision of this Section 4.02 of the Lease shall be an Event of Default under this Lease.

SECTION 4.03. - PAYMENT FOR UTILITIES FOR DEMISED PREMISES

Tenant shall keep and maintain all utilities located in or exclusively serving the Demised Premises in good working order and operating condition and shall maintain an air temperature throughout the Demised Premises of at least 50 degrees Fahrenheit at all times. Tenant shall pay promptly and before any delinquency for nonpayment all charges for utilities serving the Demised Premises, including without limitation, electricity, gas, and telephone. In the event that any utilities are not separately metered for Tenant, Tenant shall pay its proper pro-rata portion of such utilities in common with others using such utilities off the same meter as Additional Rent. On request of Landlord or Tenant, Tenant's use of any particular utility shall be determined by appropriate survey of Tenant's equipment, by monitoring of submeters, or other method fairly evaluating Tenant's use, and after such determination, Tenant's charges for utilities uses surveyed shall be adjusted in accordance with such determinations. In the event Tenant's use of any utilities on a common meter are irregular or disproportionate, either Landlord or Tenant shall have the option as to future charges to have installed at Tenant's expense separate meters for the utilities in question.

ARTICLE 5
REPAIRS AND MAINTENANCE BY THE TENANT

SECTION 5.01. - REPAIRS AND MAINTENANCE

Tenant shall maintain, repair, or replace (and so deliver at the end of the Lease Term) each and every part of the Demised Premises, including without limitation, all interior glass, interior doorways and doors, interior walls, interior ceilings, interior floors, plumbing from the point at which it departs from the water or sewer mains, electrical, HVAC, fire protection sprinklers from the point at which they depart from the sprinkler main, and all equipment located within the Demised Premises, all equipment or other items on the roof that serve the Demised Premises, all equipment in the dock areas serving the Demised Premises (such as Tenant's electrical services, gas services, etc.) and all equipment serving the dock areas that are part of the Demised Premises (including dock levelers, dock seals and rear canopies, but excluding the standard dock doors that are furnished by Landlord for each dock) in **the same state of** first class repair and condition **as it had been on the Commencement Date**, and shall make at Tenant's sole cost and expense such replacements, restorations, renewals or repairs, in quality equivalent to the original work replaced, as may be required to so maintain the same, ordinary wear and tear only excepted, **unless such unsatisfactory state of repair and condition is caused solely by the gross negligence or willful misconduct of the Landlord or Landlord's employees, agents or contractors**. Equipment servicing the Demised Premises that is located outside the Demised Premises shall be maintained by Tenant if it was installed by the Tenant or by the Landlord as part of Landlord's Work (e.g. HVAC equipment located on the roof). Tenant shall make no exterior or interior alterations, **except for (1) alterations** ~~other than~~ as required pursuant to Tenant's obligations to make repairs and maintain the Demised Premises; **and (2) cosmetic, non-structural alterations, such as painting, carpeting, and wall papering, costing less than $10,000 per alteration or series of alterations (such alterations requiring written notice to Landlord, but not Landlord's written consent)**, without Landlord's prior written consent, and in any case, all work performed by Tenant shall be done in a good and workmanlike manner, and so as not to disturb or inconvenience other tenants in the Building or on the Property. Tenant shall not at any time permit any work to be performed on the Demised Premises except by duly licensed contractors or artisans, each of whom must carry general public liability insurance, in such amounts as are reasonably directed by Landlord and under which Landlord is an additional insured, certificates of which shall be furnished to Landlord. At no time may Tenant or Tenant's contractors, agents or employees do any work that results in a claim of lien against the Demised Premises or any other property of the Landlord. Upon termination of the Lease or vacation of the Demised Premises by Tenant, Tenant shall restore at Tenant's sole expense the Demised Premises to the same condition as existed at the completion of Landlord's Work, ordinary wear and tear only excepted; provided, however, that Landlord may elect to require Tenant to leave alterations performed by Tenant.

Landlord warrants that the Demised Premises shall be free of defects in materials and workmanship for a period of one (I) year from the Commencement Date.

ARTICLE 6
REPAIRS, MAINTENANCE AND SERVICES BY THE LANDLORD

SECTION 6.01. - SERVICES TO THE DEMISED PREMISES

Landlord shall, subject to interruptions beyond Landlord's control and to the scheduling of such services by providers, cause to be furnished to the Demised Premises the following connections: water and sewer connections in common with other Tenants, telephone line connections providing access to the local public telephone company, normal electrical connections, and natural gas connections.

SECTION 6.02. - LANDLORD'S REPAIRS

Landlord will maintain the foundations, water mains, sewer mains, sprinkler mains, structural and glass portions of the exterior shell of the Building, including the exterior roof, exterior walls, exterior windows and exterior doors of the Demised Premises, and landscaping and paving on the Common Areas in good order and repair. Notwithstanding the foregoing sentence, Tenant shall pay the costs of any such repairs caused by the acts of Tenant, its employees, agents, invitees, licensees, or contractors. Tenant agrees to give Landlord written notice of the necessity for any repairs required to be made by Landlord, and Landlord shall have a reasonable period of time thereafter to make such repairs. Nothing contained in this Section 6.02 shall be construed to preclude or prevent such repairs from being a part of the Direct Expenses, so long as the repairs are not capital expenses according to Generally Accepted Accounting Principles.

ARTICLE 7
COMMON AREAS

SECTION 7.01. - DEFINITION OF COMMON AREAS

For purpose of this Lease, the term "Common Areas" shall mean all areas, improvements, space, equipment and special services in or adjacent to the Building or Lot provided by Landlord for the common or joint use and benefit of tenants, customers, and other invitees, including without limitation any existing or future entrance ways, exits, roads, parking lots, walkways and other common spaces in the Property from time to time designated as Common Areas by the Landlord.

SECTION 7.02. - USE OF COMMON AREAS

Provided there is no uncured Event of Default by Tenant under this Lease, Tenant shall be entitled to use, in common with others entitled thereto, so much of the Common Areas as may be designated from time to time by the Landlord, subject, however to the terms and conditions of this Lease and to such rules and regulations for the use thereof as may be proscribed from time to time by Landlord.

SECTION 7.03. - CHANGES AND ALTERATIONS OF COMMON AREAS

The Landlord reserves the rights, at any time and from time to time to increase or decrease the size of and to alter the configuration of the Common Areas, **provided that such alterations do not materially adversely affect Tenant's access to the Demised Premises**. In the event of any such change or alteration, Landlord shall not be liable to Tenant therefore, and Tenant shall not be entitled to any compensation or diminution or abatement of Monthly Minimum Rent, nor shall such diminution or alteration of the Common Areas be considered a constructive or actual eviction.

ARTICLE 8
INSURANCE AND INDEMNITY

SECTION 8.01. - INSURANCE ON THE BUILDING AND CERTAIN IMPROVEMENTS

During the Term of this Lease and any extensions or renewals thereof, the Landlord shall maintain property and casualty insurance on the Building and on so much of the upfit and additional real and personal property improvements and appurtenances thereto as shall be installed by or at the expense of Landlord and constitute the property of Landlord. Such insurance shall provide fire and extended peril coverage and coverage against such further and additional perils as Landlord shall from time to time determine in its sole discretion to be appropriate.

The amount of any insurance premiums incurred by or accrued as an expense of Landlord in securing such coverage shall constitute a Direct Expense and the Tenant shall pay its allocable portion of such cost as a part of the Tenant's share of Direct Expenses.

SECTION 8.02. - TENANT'S PUBLIC LIABILITY INSURANCE

Tenant shall, at all times during the Term hereof, at its sole cost and expense, procure and maintain in force and effect a valid and enforceable policy or policies of commercial public liability insurance issued by a company or companies from time to time approved by Landlord which companies must be authorized to issue insurance policies in North Carolina. Such policy or policies shall insure against loss, damage or liability for injury to or death of persons and loss or damage to property occurring from any cause whatsoever in, upon or about the Demised Premises including any adjoining sidewalks, passageways, parking areas, driveways and other Common Areas. Such policies of liability insurance shall name Landlord and its designated property manager as an additional insured and shall be in amounts and afford coverage against perils all as is reasonably required from time to time by Landlord. Coverage shall initially be in the single limit amount of ONE MILLION DOLLARS ($1,000,000.00).

SECTION 8.03. - INSURANCE RATING

Tenant will not conduct, or permit to be conducted, any activity, will not place any equipment or materials in or about the Demised Premises, Building, Lot, or Property, and will not take nor allow its contractors, employees, agents, guests or invitees to take any action which will, in any way, violate any requirement of Landlord's insurance policies or which will increase the rate of property, casualty, liability or other insurance on the Demised Premises or on the Building or their operation, or which makes any property, casualty, liability or other insurance on the Demised Premises, Building, Lot or Common Areas unavailable to Landlord from companies acceptable to the Landlord. However, in the event the Tenant shall take any such action then, in addition to and not in limitation of any other rights pursuant to this Lease, the Landlord may require the Tenant, upon demand, to separately pay or reimburse to Landlord the amount of any increased insurance premiums attributable to such action which are in excess of those charged at the Commencement Date, resulting from such activity.

SECTION 8.04. - POLICIES OR CERTIFICATES OF INSURANCE

Tenant will furnish the Landlord prior to the delivery of the Demised Premises to Tenant, and thereafter not fewer than thirty (30) days prior to the expiration date of any expiring policies, certified copies of policies or certificates of insurance bearing notations evidencing the payment of premiums and evidencing the insurance coverage required to be carried by Tenant. Each policy and certificate shall contain an endorsement or provision requiring not fewer than thirty (30) days written notice to Landlord prior to the cancellation, diminution in the perils insured against or reduction of the amount of coverage of the particular policy in question.

SECTION 8.05. - INSURANCE OF TENANT'S PROPERTY

Tenant hereby acknowledges and agrees that it will secure and maintain insurance upon its fixtures, trade fixtures, personal property and any and all other property of the Tenant or of any third parties which may from time to time be stored or maintained in, on or around the Demised Premises and Building. Such insurance shall be maintained in such amounts as shall be necessary to cover the replacement cost thereof. Such insurance shall be issued by a company or companies satisfactory to Landlord and authorized to issue insurance policies in North Carolina.

All such policies shall include a waiver of subrogation of any and all claims against the Landlord. The Tenant hereby agrees that it will look solely to its insurance policies for recovery of any loss for any such property and further confirms and agrees that in no event will it make any claim against the Landlord for any loss to any such property and that it will indemnify and agrees to defend and hold the Landlord and Landlord's agents and employees harmless from and against any claims, causes of action, damages, liabilities, costs, expenses, losses and expenses, including without limitation reasonable attorney's fees, arising out of Tenant's failure to maintain such insurance.

SECTION 8.06. - RELEASE

Landlord hereby releases Tenant, but only to the extent of Landlord's insurance coverage, from any liability for loss or damage caused by fire or any of the extended coverage perils included in Landlord's insurance policies covering the Demised Premises and Building even if the insured peril shall be brought about by the default, negligence or other action of the Tenant, its agents, employees; provided, this release shall be in effect only with respect to an insured loss and only so long as Landlord's policy applicable to such loss shall contain a clause to the effect that this release shall not affect the right of Landlord to recover under such policy. Landlord does not waive and hereby reserves the right to secure compensation from Tenant for any uninsured loss, any amounts not paid because of deductibles and other amounts not paid for any reason whatsoever.

Tenant hereby releases Landlord and Landlord's agents and employees, but only to the extent of Tenant's insurance coverage, including any deductible, from any liability for loss or damage caused by fire or any of the extended coverage perils included in Tenant's insurance policies covering any property of Tenant stored at the Demised Premises and Building even if the insured peril shall be brought about by the default, negligence or other action of the Landlord, its agents, employees or any of them; provided, this release shall be in effect only with respect to an insured loss and only so long as Tenant's policy applicable to such loss shall contain a clause to the effect that this release shall not affect the right of Tenant to recover under such policy.

SECTION 8.07. - INDEMNIFICATION

Tenant hereby indemnifies Landlord ~~and Landlord's agents and~~ employees and agrees to defend hold the Landlord ~~and Landlord's agents and~~ employees harmless from any and all claims, causes of action, damages, liabilities, costs, expenses, losses and expenses including without limitation reasonable attorney's fees in connection with loss of life, personal injury, or damage to property arising from or out of any occurrence in, upon or at the Demised Premises or out of the occupancy or use by Tenant of the Demised Premises or Property or any part thereof, and occasioned wholly or in part by an act or omission of Tenant, its subtenants, concessionaires, agents, contractors, employees, invitees, or licensees, or any one or more of them.

SECTION 8.08. - NOTIFICATION

Tenant agrees to give Landlord prompt notice of any accidents or occurrences subject to the provisions of this Article 8.

ARTICLE 9
LANDLORD'S RESERVED RIGHTS

SECTION 9.01. - ALTERATIONS AND ADDITIONS TO BUILDINGS AND LOT

Landlord hereby reserves the right at any time and from time to time to make alterations or additions to the Building and Lot and to install, maintain, use, repair and replace pipes, ducts, conduits and wires located in the Demised Premises but serving other parts of the Building or Property; provided that such activities undertaken by Landlord do not materially interfere with Tenant's use of the Demised Premises. Landlord's right to make such alterations or additions shall include without limitation the rights to build additional stories onto the Building, to construct such parking facilities as may be necessary or desirable, and to comply with applicable laws.

It is understood and agreed that the description of the Demised Premises as set forth inEXHIBIT A hereof and the location of the Demised Premises in the Building shall be subject to such changes as may be certified by Landlord's architect as necessary for engineering or architectural purposes for the construction of the improvements to be constructed thereon, so long as such changes do not materially change the Demised Premises or adversely affect access to the Demised Premises. Any such changes so certified shall not invalidate this Lease and the description and location of the Demised Premises shall be deemed to have been expressly modified and amended herein in accordance with such changes.

SECTION 9.02. - RELOCATION OF TENANT

The Landlord shall have the right from time to time during the Term to relocate the Demised Premises from their present location within the Building to another location within the Property having comparable quality and comparable rentable square footage, **and which shall provide comparable proportions of office, lab and warehouse space**, to the Demised Premises; provided that the Landlord gives the Tenant written notice of the Landlord's intention to relocate at least ninety (90) days before undertaking such relocation. The Landlord shall pay all reasonable moving costs incurred by Tenant in connection with such move **and shall perform, at its sole cost and expense, such work as shall be necessary to provide the relocated premises with improvements substantially similar to those improvements provided for the Demised Premises under the Landlord Work provisions of this Lease**. Tenant agrees to provide an estimate of such moving costs within two (2) weeks of notification by Landlord. Upon the completion of such relocation, this Lease shall automatically cease to cover the space constituting the Demised Premises immediately before such relocation, and shall automatically thereafter cover the space to which the Demised Premises have been relocated, as aforesaid, all on the same terms and subject to the same conditions as those set forth in the provisions of this Lease as in effect immediately before such relocation, and all without the necessity of further action by either party hereto; provided, that each party hereto shall, promptly upon its receipt of a written request therefore from the other, enter into such amendment of this Lease as the requesting party considers reasonably necessary to move Tenant. **Landlord shall use commercially reasonable efforts to avoid disrupting the business activities of Tenant during such relocation.**

SECTION 9.03. - ACCESS TO DEMISED PREMISES

Landlord shall have the right, either itself or through its authorized agents, to enter the Demised Premises at all reasonable times,**upon reasonable oral notice in the event of showing space to prospective tenants other than in the last six (6) months of the Term of this Lease**, to examine the same, to show them to prospective tenants for other spaces in the Building or for the Demised Premises, to allow inspection by mortgagees, and to make such repairs, alterations, changes and inspections as Landlord deems necessary. In case of emergency, Landlord or Landlord's authorized agent may access the Demised Premises at any time without any liability to the Tenant. Tenant, its agents, employees, invitees, and guests, shall have the right of ingress and egress to Common Areas, provided Landlord by reasonable regulation may control such access for the comfort, convenience and protection of all tenants in the Building.

Tenant agrees to provide Landlord with two (2)*keys to each* lock in the Demised Premises.

SECTION 9.04. - LANDLORD'S RULES AND REGULATIONS

Landlord reserves the right to establish (and change from time to time) regulations it deems appropriate for the common use and benefit of all tenants, with which regulations Tenant shall comply.

SECTION 9.05. - WINDOW TREATMENTS, SIGNS, AND EXTERIOR APPEARANCE

Tenant may not erect, install, or display any sign, advertising material, or window treatment on any wall or window surface of the Demised Premises visible from the exterior or on the Building, without the prior written consent of the Landlord. **All signage shall comply with the Southport Signage Standards attached hereto as Exhibit G and incorporated herein by reference. Tenant shall have the right to approve any signage erected, installed or displayed on the exterior of the Demised Premises by the Landlord**. Landlord will not approve any signs, advertising material or window treatments which, in the sole discretion of the Landlord, are detrimental to the external appearance of the Building, Property or the Common Area. Landlord shall furnish, install, and maintain an individualized Tenant identification sign, built to Landlord's specifications, on the facade of the Building. Landlord reserves the right, at any time, to change the name by which the Property or the Building is designated.

Landlord shall, at its expense relocate Tenant's existing exterior signage located at 215 Southport Drive, Suite 300 Morrisville, North Carolina and install on the exterior of the Demised Premises in accordance to Landlord's sign criteria (attached hereto as Exhibit G).

SECTION 9.06. - LANDLORD'S PERFORMANCE OF TENANT'S OBLIGATIONS

In the event the Tenant shall fail to discharge any duties and obligations hereunder imposed upon Tenant, the Landlord shall have the right, but not the obligation, to perform such duties or obligations and, in such event, the Landlord and its agents shall be entitled to receive as reimbursement from the Tenant, upon demand, an amount equal to One Hundred Twenty Percent (120%) of the total of all costs and expenses incurred by Landlord in performing such duties or obligations. Any such reimbursement and charge shall constitute Additional Rent hereunder.

ARTICLE 10
FINANCING AND REFINANCING

SECTION 10.01. - ESTOPPEL CERTIFICATE

Tenant will furnish to Landlord and/or to the holder or prospective holder of any mortgage or deed of trust from time to time encumbering the Demised Premises, a statement of the status of any matter pertaining to this Lease, including, without limitation, acknowledgment that (or the extent to which) the Lease is in full force and effect, that Landlord is in compliance with its respective obligations thereunder, and that Tenant has no offsets or claims against Landlord.

Tenant agrees to execute and deliver within ten (10) days after receipt thereof, an instrument of estoppel in the form or substantially in the form attached hereto as Exhibit D**In the event that Tenant refuses to or does not respond to Landlord's request to execute any such estoppel certificate required by any mortgagee, assignee or certificate required by any mortgagee, assignee or purchaser as aforesaid within (10) calendar days, then Tenant shall be deemed to have irrevocably reviewed, accepted, executed and delivered said documents to Landlord and Landlord, any mortgagee, purchaser, assignee or other party may rely on same as if actually executed and delivered by Tenant unmodified.** ~~**Tenant** hereby appoints Landlord as its true and lawful attorney to execute for and on behalf of Tenant the foregoing instrument of estoppel in the event Tenant does not execute and return the same within ten (10) days after its receipt of such instrument.~~

SECTION 10.02. - SECTION 10,02 - SUBORDINATION- ATTORNMENT

This Lease shall be deemed subject and subordinate to any mortgage or deed of trust which may heretofore or hereafter be executed by Landlord encumbering the Demised Premises and to all renewals, modifications or extensions thereof, **provided Landlord's lender agrees that it will not disturb Tenant's tenancy so long as there is no Event of Default hereunder by Tenant** The Landlord's interest in this Lease may be assigned as security for any financing now or hereafter obtained by Landlord. In the event any proceedings are brought for foreclosure of any mortgage or deed of trust on the Demised Premises or for the exercise of any rights pursuant to any mortgage or deed of trust, upon demand, Tenant will attorn to the mortgagee, assignee or purchaser at a foreclosure sale as the case may be and will recognize such assignee, mortgagee or purchaser as Landlord, providing such assignee, mortgagee or purchaser agrees not to disturb Tenant's possession so long as there is no Event of Default by Tenant under the terms of this Lease. Tenant agrees to execute and deliver **within (10) calendar days after receipt thereof, a subordination, non-disturbance and attornment agreement in the form or substantially in the form annexed hereto as Exhibit E to Landlord** ~~**an Attornment, Subordination and Non-Disturbance Agreement in the form of substantially in the form attached hereto as Exhibit E**~~ and incorporated herein by reference, for the purpose of evidencing the Tenant's agreement to subordinate its interest as a tenant to the deed of trust lien of the holder of any deed of trust encumbering the Building. In the event that Tenant refuses to or does not respond to Landlord's written request to execute any documents required by any deed of trust beneficiary, mortgagee, assignee or purchaser as aforesaid within ten calendar days, **then Tenant shall be deemed to have irrevocably reviewed, accepted executed and delivered said documents to Landlord and Landlord, any mortgagee, purchaser, assignee or other party may rely on same as if actually executed and delivered by Tenant unmodified.** ~~then Landlord shall, without any further action required on the part of the Tenant, be empowered as Tenant's attorney-in-fact to deliver such documentation.~~

SECTION 10.03. - SECTION 10.03 - CERTAIN CHANGES FOR FINANCING

If Landlord seeks a loan on the Demised Premises, Lot, Building or Property and the proposed mortgagee requires as a condition of making the loan that this Lease be modified, Tenant agrees to enter into such modification agreement providing that the same does not increase the charges to Tenant, does not vary the areas demised, does not change the Term of Tenant's Lease and does not materially increase Tenant's obligations, duties or covenants under this Lease.

ARTICLE 11
DESTRUCTION OR CONDEMNATION

SECTION 11.01. - DESTRUCTION OF PREMISES

If the Demised Premises are totally destroyed by fire or other casualty not resulting from the wrongful or negligent act of Tenant, either Landlord or Tenant may by written notice, given not later than thirty (30) days after the date of such total destruction, terminate this Lease, in which event rent paid for the period beyond the date of destruction shall be refunded to Tenant. If there is not total destruction and Tenant reasonably is required to close operation during repairs, Monthly Minimum Rent and monthly installments of Tenant's share of Direct Expenses shall abate while so closed, but if Tenant is able to continue its operations during repairs, Monthly Minimum Rent and monthly installments of Tenant's share of Direct Expenses shall be adjusted and prorated in the proportion which the area of unusable leased space bears to the total Demised Premises, providing that Landlord shall not in such case have any liability for losses claimed by Tenant. However, if: (i) the damages are such that Landlord concludes that restoration cannot be completed within one hundred and fifty (150) days; or (ii) less than ten percent (10%) of the Lease Term remains; or (iii) in Landlord's judgment, the cost of restoration will exceed the amount of the cumulative Monthly Minimum Rent due from the Tenant for the next twelve calendar months succeeding the date of the casualty; or (iv) insurance carried by Landlord is insufficient to restore the Demised Premises, Landlord may at its option terminate this Lease. If the Demised Premises are damaged by cause due to fault or neglect of Tenant, its agents, employees, invitees, or licensees, there shall be no apportionment or abatement of any rent. Landlord shall not be required to restore fixtures or improvements made or owned by Tenant that were not part of Landlord's Work or subsequently constructed in the Demised Premises by Landlord as part of the Landlord's work or other Lease terms.

SECTION 11.02. - CONDEMNATION

If the whole or more than twenty per cent (20%) of the Demised Premises is taken by any governmental agency or corporation vested with the right of exercise of eminent domain, whether such taking be effected by Court action or by settlement with the agency exercising or threatening to exercise such power and if the property so taken renders the remainder of the Demised Premises unfit for the use thereof by Tenant, then Tenant shall have the option to terminate this Lease, which option must be exercised by notice in writing, received by Landlord within sixty (60) days of such taking. If the Tenant shall not elect to terminate, or if the taking does not interfere with Tenant's use of the Demised Premises to the extent Tenant does not have an option to terminate, there shall be an adjustment of all rents reflecting on a pro-rata basis any reduction in the Demised Premises.

If the whole of the Demised Premises shall be acquired or condemned by eminent domain for any public or quasi-public use or purpose, then the Term of the Lease shall cease and terminate as of the date of title vesting in such public or quasi-public entity and all rents shall be paid up to that date and Tenant shall have no claim against Landlord nor the condemning authority for the value of any unexpired Term of this Lease. In the event of a partial taking or condemnation which is not extensive enough to render the Demised Premises unsuitable for the business of the Tenant, the Landlord shall promptly restore the Demised Premises to a condition comparable to its condition at the time of such condemnation less the portion lost in the taking, and this Lease shall continue in full force and effect with the rents proportionally adjusted.

If the whole, or a substantial part, as determined by Landlord in its sole discretion, of the common parking areas shall be acquired or condemned as aforesaid, then the term of this Lease shall cease and terminate as of the date of title vesting in such public or quasi-public entity unless Landlord shall take immediate steps to provide other suitable parking facilities. In the event that Landlord shall provide such other parking facilities, then this Lease shall continue in full force and effect without any reduction or abatement of rent.

In the event of any condemnation or taking as aforesaid, whether whole or partial, the Tenant shall not be entitled to any part of the award paid for such condemnation and Landlord is to receive the full amount of such award, the Tenant hereby expressly waiving any right or claim to any part thereof. Although all damages in the event of any condemnation are to belong to the Landlord, whether such damages are awarded as compensation for diminution in value of the leasehold or to the fee of the Demised Premises, Tenant shall have the right to claim and recover from the condemning authority, but not from Landlord, such compensation as may be separately awarded or recoverable by Tenant in Tenant's own right on account of any and all damage to Tenant's business by reason of the condemnation and for or on account of any cost or loss to which Tenant might be put in removing Tenant's merchandise, furniture, fixtures, leasehold improvements and equipment, provided such award to Tenant does not reduce the Landlord's award.

ARTICLE 12
DEFAULT BY TENANT AND LANDLORD'S REMEDIES

SECTION 12.01. - EVENTS OF DEFAULT

For purposes of this Lease, the occurrence of any one or more of the following shall constitute an "Event of Default" hereunder:

(a) Tenant fails to pay any Monthly Minimum Rent, Additional Rent or other monetary payments ~~as and when provided in this Lease~~, within five (5) days after receipt of written notice from Landlord that Landlord has not received any such payment when due as and when provided for in this Lease; or

(b) Tenant breaches any other covenant, term, condition, agreement or obligation herein set forth and shall fail to cure such breach within ten (10) days after written notice; **or if it cannot reasonably be cured within ten (10) days, such longer period as may be reasonably required provided that Tenant diligently commences and pursues the cure of such breach;**

(c) The Assignment by Tenant of all or any part of its property for the benefit of creditors;

(d) The levy or execution, attachment, or taking of property, assets, or the leasehold interest of Tenant by process of law or otherwise in satisfaction of any judgment, debt, or claim;

(e) The filing by Tenant of any petition or action for relief under any creditor's law (including bankruptcy, reorganization, or similar actions), either in state or federal court; or

(f) The filing against Tenant of any petition or action for relief under any creditor's law (including bankruptcy, reorganization, or similar actions), either in state or federal court; which is not dismissed within sixty (60) days.

Upon the occurrence of any Event of Default, Landlord shall be entitled by written notice to the Tenant to either (i) terminate the Term hereof or (ii) to terminate Tenant's right to possession or occupancy only, without terminating the Term of this Lease. Unless the Term is specifically terminated by notice in writing, it shall be assumed that the Landlord has elected to terminate possession only, without terminating the Term.

Upon the occurrence of any Event of Default hereunder, Landlord shall act in a commercially reasonable manner to mitigate its damages.The remedies of terminating the Term and of terminating possession shall be in addition to and not in limitation of any rights otherwise available to the Landlord and the exercise by Landlord of any such rights shall not preclude the exercise of any other rights available to the Landlord at law or in equity.

SECTION 12.02. - LANDLORD'S RIGHTS ON TERMINATION OF TERM OR POSSESSION

Upon any termination of the Term hereof, whether by lapse of time or otherwise, or upon any termination of Tenant's right to possession or occupancy only, without terminating the Term hereof, Tenant shall surrender possession and vacate the Demised Premises and shall deliver possession thereof to the Landlord; and Tenant hereby grants to Landlord full and free license to enter into and upon the Demised Premises in such event and with or without process of law to repossess the Demised Premises as of Landlord's former estate and to expel or remove Tenant and any others who may be occupying the Demised Premises and to remove therefrom any and all property, using for such purpose such force as may be necessary without being guilty of or liable for trespass, eviction or forcible entry or detainer and without relinquishing Landlord's right to rent or any other right given to Landlord hereunder or by operation of law.

Except as otherwise expressly provided in this Lease, Tenant hereby expressly waives any right to service and demand for payment of rent or for possession of the Demised Premises or to reenter the Demised Premises, including any and every form of demand and notice prescribed by any statute or any other law.

If Landlord elects to terminate Tenant's right to possession only as above provided, without terminating the Term hereof, Landlord at its option may enter into the Demised Premises, remove Tenant's property and other evidences of tenancy and take and hold possession thereof without such entry and possession terminating the Term hereof and without releasing Tenant from its obligation to pay rents herein reserved for the full Term hereof. Upon and after entry into possession without terminating such obligations, Landlord may, but shall not be obligated to, relet the Demised Premises, or any part for the account of Tenant to any person, firm or corporation for such rent, for such time, and upon such terms as Landlord in its sole discretion shall determine. If any rent collected by Landlord upon any such reletting for Tenant's account is not sufficient to pay monthly the full amount of the rent herein reserved, (including Monthly Minimum Rent, Additional Rent, and other charges), and not theretofore paid by Tenant, together with the costs of any brokerage fees, repairs, alterations, or redecoration necessary for such reletting, Tenant shall pay to Landlord the amount of each deficiency upon demand, and if the rent so collected from such reletting is more than enough to pay the full amount of the rents reserved hereunder and all of the aforementioned costs, Landlord shall be entitled to retain such excess. Notwithstanding any termination of the right to possession without termination of the Term, the Landlord expressly reserves the right, at any time after the termination of possession, to terminate the Term of this Lease by notice of such termination to Tenant.

Tenant, upon expiration or termination of this Lease, either by lapse of time or otherwise, agrees peaceably to surrender to Landlord the Demised Premises in broom-clean condition and in good repair, **subject to damage to casualty and repairs that are the responsibility of Landlord.**In the event Tenant shall fail to leave the Demised Premises upon expiration or termination of this Lease, Landlord, in addition to all other remedies available to it hereunder, shall have the right to receive, as rents for all the time Tenant shall so retain possession of the Demised Premises, or any part thereof, an amount equal to One Hundred Fifty **Twenty-Five** Percent (440125%) of the Monthly Minimum Rent and Additional Rent as applied to such period.

ARTICLE 13
MISCELLANEOUS PROVISIONS

SECTION 13.01. - ASSIGNMENT OF LEASE - SUBLEASE

Tenant may not assign or encumber this Lease, and may not sublet any part or all of the Demised Premises without the written consent of Landlord, which Landlord**shall not unreasonably withhold,** ~~may either grant or withhold in its sole discretion.~~ **Notwithstanding the foregoing, Landlord's withholding of its consent shall be reasonable if the assignee or sublessee proposed by Tenant conducts a business that is incompatible with the Property and its tenants, or the proposed assignee or sublessee is at that time a tenant or occupant of any portion of the Property.** Any assignment or sublease to which Landlord may consent (one consent not being any basis to contend that Landlord should consent to a further change) shall not relieve Tenant of any of its obligations hereunder. In no event shall this Lease be assignable by operation of any law, and Tenant's rights hereunder may not become, and shall not be listed by Tenant as an asset under any bankruptcy, insolvency, or reorganization proceedings. Tenant is not, may not become, and shall never represent itself to be an agent of Landlord, and Tenant expressly recognizes that Landlord's title is paramount, and that it can do nothing to affect or impair Landlord's title.
Notwithstanding anything to the contrary contained in this Section 13.01, Tenant may assign this Lease or sublet the Demised Premises without Landlord's consent (provided that Tenant shall provide written notice thereof to the Landlord) to: (a) any entity resulting from a merger or consolidation to which Tenant is a party; or (b) any entity which purchases all or substantially all of Tenant's assets or business. Tenant shall not be released from any of its obligations hereunder by any such assignment or subletting.

SECTION 13.02. - QUIET ENJOYMENT

If Tenant promptly and punctually complies with each of its obligations hereunder, it shall peacefully have and enjoy the possession of the Demised Premises during the Term hereof, providing that no action of Landlord in work in other space in the Building, on other areas of the Lot or Property, or in repairing or restoring the Demised Premises, shall be deemed a breach of this covenant, or give Tenant any right to modify this Lease either as to Term, rent payable, or other obligations to perform. However, Landlord shall not be responsible or liable to Tenant for injury or damage resulting from acts or omissions of persons occupying property adjacent to the Demised Premises or any part of the Building in which the Demised Premises are a part, or for injury or damage resulting to Tenant or its property from bursting, stoppage or leaking of water, gas, sewer, sprinkler or steam pipes, except to the extent such loss or damage arises from the willful misconduct **or gross negligence** of Landlord.

SECTION 13.03. - SECURITY DEPOSIT

In the event that Tenant pays to Landlord a security deposit ("Security Deposit") in accordance with Section 6 of Exhibit C to this Lease, then Landlord shall retain the Security Deposit as additional security for the performance by Tenant of each of its obligations hereunder. If Tenant fails at any time to perform its obligations, Landlord may at its option apply said deposit or so much thereof as is required, to cure Tenant's failure to perform, but if prior to the termination of this Lease, Landlord depletes said deposit in whole or in part, Tenant shall immediately restore the amount so used by Landlord, the obligation to so restore to be regarded as the obligation to pay Additional Rent. This deposit shall not bear interest, and unless the Landlord uses the same to cure an Event of Default of Tenant, or to restore the Demised Premises to the condition that Tenant is required to leave them at the conclusion of the Term, Landlord shall, within thirty (30) days of the termination of the Lease, refund to Tenant, so much of the deposit as it continues to hold. If Landlord transfers its interest in the Demised Premises during the Term, Landlord may assign the Security Deposit to the transferee and thereafter shall have no further liability for the return of such Security Deposit.

SECTION 13.04. - NOTICES

Any notices which Landlord or Tenant is required or desires to give to the other shall be deemed sufficiently given or rendered if, in writing, delivered personally, sent by certified or registered mail, postage prepaid, or deposited with a nationally recognized overnight courier service for overnight delivery to the address listed after the respective signatures on the last page of this Lease.
Any notice given herein shall be deemed delivered when delivered personally, when the return receipt therefore is signed or refusal to accept the mailing by the addressee is noted thereon by the postal authorities or by the overnight delivery company, as applicable.

SECTION 13.05. - LIABILITY OF LANDLORD

In the event Landlord shall fail to perform any covenant, term or condition of this Lease upon Landlord's part to be performed, Tenant covenants and agrees to look solely to Landlord's estate and interest in the Demised Premises and the Lot on which the Demised Premises are located for any recovery of money judgment from Landlord from and after the date of this Lease. In no event is Landlord, its officers or employees or an individual member, shareholder, general or limited partner of Landlord, or any successor in interest thereof, ever to be personally liable for any such judgment.

SECTION 13.06. - SALE BY LANDLORD

The Landlord may at any time assign or transfer its interest as Landlord or may sell or transfer its interest in all or part of the Property of which the Demised Premises is a part without affecting any obligations of Tenant hereunder. The term Landlord as used in this Lease so far as the covenants and obligations on the part of the Landlord are concerned, shall be limited to mean and include only the owner or owners of the Demised Premises at the time in question and in the event of any transfer or conveyance of the Landlord's title to such property, other than by an assignment for security only, the grantee shall automatically be substituted and the grantor shall automatically be released from any and all liability arising with respect to the performance of any covenants or obligations after the effective date of any such sale.

SECTION 13.07. - BROKERAGE

Tenant warrants that it has had no dealings with any broker or agent in connection with this Lease, other than**Dee Creech of NAI Carolantic Realty** and covenants to pay, hold harmless and indemnify Landlord from and against, any and all cost, expense or liability for any compensation, commissions and charges claimed by any other broker or agent with respect to this Lease or the negotiation thereof.

SECTION 13.08. - PARKING

Landlord shall provide Tenant with **twenty-one (21)** unassigned parking spaces at no additional charge, for the nonexclusive use of Tenant and its employees and visitors, in common with other tenants of the Building and their visitors. Tenant and its visitors may not use more than the above designated number of parking spaces at any one time. If Landlord incurs additional expenses in monitoring the parking of Tenants employees and visitors, then Tenant shall pay to Landlord as additional rent the amount of such additional expenses upon Landlords written demand therefor.

Landlord shall mark and designate three spaces as "VISITOR" spaces in front of the Building. The spaces will not be marked and designated exclusively for Tenant's visitors and Landlord shall have no obligation or responsibility to monitor the use of the spaces marked and designated as "VISITOR" spaces or to take any action to assure that the "VISITOR" spaces are used exclusively by Tenant's visitors.

Additional dedicated parking spaces can be designated adjacent to the Demised Premises in the Tenant's dock area. The number of dedicated parking spaces will depend upon the manner in which Tenant uses its dock area. Dedicated parking spaces must be designed to meet all local, state and federal codes and regulations, and comply with Landlord's rules and regulations.

SECTION 13.09. - ROOF AND WALLS

Landlord shall have the exclusive right to use all or any part of the roof of the Building for any purpose; to erect other structures over all of any part of the Building; and to erect in connection with the construction thereof temporary scaffolds and other aids to construction on the exterior of the Demised Premises, provided that access *to* the Demised Premises shall not be denied **or materially impaired.**

SECTION 13.10. - SPECIAL PROVISIONS - EXHIBIT C

Notwithstanding any contrary provisions hereof, the provisions, if any contained within Exhibit C constitute special provisions and agreements of the parties which shall supersede any provisions of this Lease which are inconsistent with the provisions stated within Exhibit C.

SECTION 13.11. - GENERAL RULES FOR INTERPRETING THIS LEASE

Headings of paragraphs are for convenience only and shall not be considered in construing the meaning of the contents of such paragraph.

The acceptance of rentals and other payments by Landlord for any period or periods after an Event of Default shall not be deemed a waiver of any rights on the part of the Landlord, including without limitation the right to terminate this Lease for any Event of Default. No waiver by Landlord of any of the terms or conditions of this Lease shall be construed as a waiver by Landlord of any subsequent Event of Default.

The invalidity of any provision of this Lease shall not have any effect on the balance hereof.

Should Landlord or Tenant institute any legal proceedings against the other for breach of any provision herein contained, and prevail in such action, the non-prevailing party shall in addition be liable for the reasonable costs and expenses of the prevailing party, including its reasonable attorney's fees.

This Lease shall be binding upon the respective parties hereto, and upon their heirs, executors, successors and assigns.

This Lease is executed with the express intent and understanding that it shall supersede any and all prior discussions and or agreements between the parties hereto, it being understood and agreed that the Lease contains the entire understanding and agreement concerning the Lease of the Demised Premises described herein.

Changes and amendments to this Lease shall be in writing signed by the party affected by such change or amendment.

This Lease may not be recorded without Landlord's prior written consent, but Tenant agrees on request of Landlord to execute a memorandum hereof for recording purposes.

The singular shall include the plural, and the masculine or neuter includes the other.

This Lease shall be construed under the laws of the State of North Carolina.

SECTION 13.12. - LANDLORD'S SECURITY INTEREST - Intentionally Deleted

~~Upon an Event of Default, in addition to any lien for rent available to the Landlord, the Landlord shall have and the Tenant hereby grants to the Landlord, a continuing security interest securing all rent and other sums of money becoming due hereunder from the Tenant upon all of the Tenant's accounts receivable, inventory, equipment and all other personal property located on the Demised Premises, none of which may be removed from the Demised Premises without the Landlord's express, written consent so long as any rent or other such sum from time to time owed to the Landlord hereunder remain unpaid or another uncured Event of Default has occurred. On the occurrence of an Event of Default, the Landlord shall have, in addition to any other remedies provided herein or by law, all of the rights and remedies afforded to secured parties under the provisions of the law, all of the rights and remedies afforded to secured parties under the provisions of the Uniform Commercial Code, as codified in North Carolina (hereinafter referred to as "the Code"), including by way of example rather than of limitation (a) the right to sell the Tenant's said property at public or private sale upon ten (10) days' notice to the Tenant, and (b) the right to take possession of such property without resort to judicial process in accordance with the Code. The Tenant shall, on its receipt of a writte43n request therefore from the Landlord, execute such financing statements and other instruments as are necessary or desirable, in the Landlord's judgment, to perfect such security interest. Landlord may file on Tenant's behalf financing statements and amendments thereto in such form as may be reasonably acceptable to Landlord to cover collateral described in this Lease and proceeds thereof.~~

SECTION 13.13. - FORCE MAJEURE

In the event Landlord or Tenant shall be delayed, hindered or prevented from the performance of any act required hereunder, by reason of weather, acts of war, civil disturbances, riots, utilities failures, transportation shortages, governmental or military restrictions or orders, acts of God, scarcity of labor or materials, strikes, fire, natural disaster, or any other reasons beyond its reasonable control, the performance *of* such act shall be excused for the period of delay, and the period for performance of any such act shall be extended as necessary to complete performance after the delay period. However, the provisions of this paragraph shall in no way be applicable to Tenant's obligations to pay Monthly Minimum Rent, Additional Rent or any other sums, monies, costs, charges or expenses required by this Lease.

THE REMAINDER OF THIS PAGE IS INTENTIONALLY BLANK THE FOLLOWING PAGE IS THE SIGNATURE PAGE.

IN WITNESS WHEREOF, Landlord and Tenant have executed this Lease in duplicate originals, all as of the day and year first above written.

LANDLORD:
Southport Business Park Limited Partnership,

BY: Southport Business Park Investors Corporation, General Partner

/s/ Robert T. Karp
Robert T. Karp
Vice President

ADDRESS FOR *LANDLORD FOR* NOTICES UNDER LEASE:

SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
101 Southcenter Court, Suite 1100
Morrisville, NC 27560
ATTN: Mr. Mitchell K. Adams

GENERAL COUNSEL
General Investment & Development Co.
600 Atlantic Avenue, Suite 2000
Boston, MA 02210
ATTN: Mr. Robert S. Farrington, Esq.

****

TENANT:

Gentris Corporation
a Delaware corporation

By: */s/ Michael P. Murphy*
Michael P. Murphy,
President

ADDRESS FOR TENANT FOR NOTICES UNDER THIS LEASE:

Mr. Michael P. Murphy
133 Southcenter Court
Suite 400
Morrisville, N.C. 27560

****

EXHIBIT A – DEMISED PREMISES

[Intentionally omitted]

EXHIBIT B – IMPROVEMENTS TO THE DEMISED PREMISES

[Intentionally omitted]

EXHIBIT C – SPECIAL PROVISIONS

[Intentionally omitted]

EXHIBIT D – TENANT ESTOPPEL CERTIFICATE

[Intentionally omitted]

EXHIBIT E – ATTORNMENT, SUBORDINATION AND NON-DISTURBANCE AGREEMENT

[Intentionally omitted]

EXHIBIT F – ACCEPTANCE OF DEMISED PREMISES MEMORANDUM

[Intentionally omitted]

EXHIBIT G – SOUTHPORT SIGNAGE CRITERIA

[Intentionally omitted]

Exhibit 10.48

October 21, 2004

Mr. Michael Murphy
Gentris Corporation
133 Southcenter Court, St, 400
Morrisville, NC 27560

Dear Michael:

Under Exhibit B-2 of our lease with Gentris, your company is given an option of adding change orders to the original tenant improvement contract of up to $10,000. For each $5,000 of tenant improvement money that is amortized into the rent, the rate will increase by $.08 per annum.

We have attached a copy of the change orders for your suite as of October 12th which total $5,000.00. By signing below, you are acknowledging the completion of the work and the correlating rent increase of $.08 per square foot per annum. We have attached a revised rent schedule for your records.

/s/Michael Murphy	25 Oct 2004
Michael Murphy Gentris Corporation	Date
/s/Mitchell K. Adams	10-21-04
Michael K. Adams Vice President Southport Business Park	Date

Exhibit A
Change Orders

[Intentionally omitted.]

Exhibit B
Revised Rent Schedule

[Intentionally omitted.]

Exhibit 10.49

SECOND AMENDMENT TO LEASE

THIS SECOND AMENDMENT TO LEASE (the "Amendment"), made as of June 17, 2005, by and between SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP, a North Carolina limited partnership (the *"Landlord"),* and GENTRIS CORPORATION, a Delaware corporation (the *"Tenant").*

WITNESSETH

WHEREAS, Landlord and Tenant entered into a certain Lease dated as of June 12, 2004 and amended by letter agreement dated October 21, 2004 (as amended, the *"Lease"),* for certain space known as Suite 400, consisting of approximately 10,207 square feet (as more particularly defined in the Lease, the*"Existing Premises")* in the Building located at 133 Southcenter Court, Morrisville, Wake County, North Carolina, as more particularly described in the Lease and

WHEREAS, Landlord and Tenant desire to modify the terms of the Lease to expand the Demised Premises and to amend certain other terms of the Lease.

NOW THEREFORE, in consideration of the premises contained herein, the sum of Ten Dollars ($10.00) and other good and valuable consideration, the mutual receipt and sufficiency of which are hereby acknowledged, Landlord and Tenant hereby amend the Lease as follows:

1. Capitalized Terms: All capitalized terms not otherwise defined herein shall have the meanings assigned to such terms in the Lease.

2. Demised Premises: Commencing July l, 2005 (subject to adjustment as set out herein, the "Expansion Space Commencement Date"), the Demised Premises shall be expanded to include an additional 5,119 square feet, as measured from the centerline of all demising and exterior walls, (the *"Expansion Space")* in the Building, as shown on Exhibit A, attached hereto and incorporated herein by reference. The Expansion Space is made up of 2,999 square feet of office space (the*"Office Space")* and 2,120 square feet of lab space (the *"Lab Space")* as shown on Exhibit A-l, attached hereto and incorporated herein by reference. As of the Expansion Space Commencement Date, the Demised Premises leased pursuant to the Lease shall contain a total of Fifteen Thousand Three Hundred Twenty -Six rentable square feet (15,326 r.s.f.).

3. Term: As of the Expansion Space Commencement Date, Section 1.02 of the Lease shall be amended to provide that the term of Tenant's leasing of the Demised Premises (as expanded hereby) is extended through and including September 30, 2010.

4. Adjustment of Expansion Space Commencement Date. If Tenant occupies all or any part of the Expansion Space prior to July 1, 2005, then the Expansion Space Commencement Date shall be the date of such early occupancy. If the Phase I Work, as defined below, has not been substantially completed by July 1, 2005, then this Amendment shall not be void or voidable, but the Expansion Space Commencement Date shall be extended until the date the Phase I Work is substantially completed; provided however, if Landlord is delayed in the substantial completion of the Phase I Work by Tenant, its employees, agents, contractors or invitees (including but not limited to because of change orders requested by Tenant or delays by Tenant in providing information required to complete the plans or construction) the Expansion Space Commencement Date will be the date Landlord would have substantially completed the Phase I Work but for such delays. Tenant shall not occupy the Office Space until the substantial completion of the Phase I Work. Notwithstanding the foregoing, if Landlord or Landlord's construction manager determines the same will not interfere with the performance of the Phase I Work, Landlord hereby agrees to give Tenant, its agents and contractors access to the Office Space prior to the Expansion Space Commencement Date to install Tenant's telephone and wiring for the Office Space, provided however, Tenant, its agents and contractors shall coordinate their work with Landlord, Landlord's contractor and/or construction manager so as to not interfere with Landlord's Work.

Tenant agrees to execute and deliver a memorandum of acceptance of premises to evidence the Expansion Space Commencement Date. Adjustment of the Expansion Space Commencement Date as set out herein shall not adjust the expiration date of September 30, 2010.

5. Landlord's Work: Tenant accepts the Expansion Space in its "as-is" condition as shown on Exhibit B attached hereto and incorporated herein by reference, subject to the tenant improvement items shown on the plans attached hereto as Exhibit C (the "*Phase I Work")* and Exhibit D (the *"Phase II Work").* Other than defects caused by or arising from Tenant's acts or omissions, Landlord warrants that the Office Space shall be free of defects in materials and workmanship for a period of one (1) year from the Expansion Space Commencement Date. The Phase I Work and the Phase II Work are sometimes collectively referred to herein as "Landlord's Work". Landlord shall perform Landlord's Work. Unless otherwise specified on the plans attached hereto as Exhibit C and Exhibit D, all Landlord's Work shall be done to Landlord's Tenant Improvement Standards attached as Exhibit B-4 to the Lease. Tenant shall occupy the Office Space upon substantial completion of the Phase I Work and shall occupy the Lab Space upon substantial completion of the Phase II Work. Upon substantial completion of the Landlord's Work for each Phase, Landlord shall notify Tenant of such substantial completion and Landlord and Tenant shall inspect the Landlord's Work for such Phase and shall prepare a punchlist of items of Landlord's Work requiring repair which Landlord shall complete within thirty (30) days. Notwithstanding anything contained herein or in Exhibit C and Exhibit D to the contrary it is understood that Landlord's Work shall not include the improvements set forth on Exhibit E attached hereto and incorporated herein by reference, whether "priced" by Landlord or not. If Tenant wishes to have any of the work or tenant improvements listed on Exhibit E performed, then the same shall be done at Tenant's expense as a change order or shall be done by Tenant at Tenant's expense. Any work done by Tenant at Tenant's expense is subject to Landlord's prior written approval and other requirements of Section 5.01 of the Lease regarding alterations or work by Tenant.

This Amendment presumes that the Phase I Work and the Phase II Work shall be done "turnkey", with Landlord paying for the cost of constructing the Phase I Work and the Phase II Work. No changes may be made to the Phase I Work. Landlord will not be able to make significant changes to the items included the Phase II Work unless Tenant pays for the entire cost of such changes with no offset for deleted items, if any, and Landlord may require Tenant to deposit with Landlord the estimated costs of such changes in excess of the Change Order Allowance set forth below. If significant changes to the Phase II Work are requested, but Tenant does not agree to pay for such changes or does not deposit the estimated cost of such work with Landlord, then Landlord, at its option may (i) refuse to perform the requested change(s) or (ii) convert the nature of the agreement as to the Phase II Work from a "turnkey" arrangement to a "Tenant pays for upfit" arrangement with Landlord providing a "tenant improvement allowance" for the Phase II Work in the amount of$54,500.00 (this amount being representative of the cost of the Phase II Work outlined on Exhibit D). If Landlord converts the nature of the agreement as to the Phase II Work to a "Tenant pays for upfit" arrangement with Landlord providing a tenant improvement allowance, then, Landlord shall give Tenant an offset for deleted items in the Phase II Work pursuant to the approved change orders.

Regardless of whether the Phase II Work is a "turnkey" arrangement or "Tenant pays for upfit" arrangement, Landlord will provide an additional allowance up to a $10,000 maximum (the "Change Order Allowance") for the cost of changes to the Phase I Work and Phase II Work collectively made pursuant to change orders approved by both Landlord and Tenant; provided however it is understood that the Change Order Allowance shall only be used to pay for building standard office improvements; no specialized laboratory equipment or other non-building standard office items or upgrades from building standard office upfit shall be paid for by the Change Order Allowance. For the purposes of this Amendment, the upfit items provided to Tenant under the Lease in connection with the initial upfit of the Existing Premises shall be considered to be "building standard office improvements". For each $5,000 (or portion thereof) of the Change Order Allowance used, the base rental rate on the Additional Space shall increase by $0.16 per square foot per annum on a pro-rata basis based on the amount of the Change Order Allowance actually used.

Tenant acknowledges that Landlord, its employees, agents, contractors (and their subcontractors) shall be working on the Phase II Work and any punchlist items for the Phase I Work in the Expansion Space (and as necessary in the Existing Premises) after the Expansion Space Commencement Date. Tenant hereby grants to Landlord, its employees, agents, and contractors (and their subcontractors) an easement in and over the Expansion Space and Existing Premises to access and perform the Landlord's Work. Tenant acknowledges and agrees that, provided Landlord is prosecuting Landlord's Work in a timely manner (subject to delays outside Landlord's reasonable control and delays caused by Tenant, its agents, employees, invitees and contractors) performance of the Landlord's Work shall not constitute a constructive eviction or a breach of the warranty of quiet enjoyment for either the Expansion Space or the Existing Premises. Other than defects caused by or arising from Tenant's acts or omissions, Landlord warrants that the Lab Space shall be free of defects in materials and workmanship for a period of one (1) year from the completion of the Phase II Work. Tenant shall not occupy the Lab Space prior to the substantial completion of the Phase II Work and shall coordinate with Landlord so as to not delay the completion of the Phase II Work. Notwithstanding the foregoing, if Landlord or Landlord's construction manager determines the same will not interfere with the performance of the Phase II Work, Landlord hereby agrees to give Tenant, its agents and contractors access to the Lab Space at least two (2) weeks prior to the dale Landlord estimates it will complete the Phase II Work to install Tenant's telephone and wiring for the Lab Space, provided however, Tenant, its agents and contractors shall coordinate their work with Landlord, Landlord's contractor and/or construction manager so as to not interfere with the Phase II Work.

Tenant acknowledges that all of Landlord's Work in regard to the tenant improvements for the Existing Premises set forth in Article 3 of the Lease have been fully completed by Landlord and Tenant has accepted the Existing Premises, subject to the additional Landlord's Work to be done in the Existing Premises pursuant to Exhibit C and Exhibit D attached hereto.

6. Rent: Page 3, Section 1.04 - RENT AND ADJUSTMENTS TO RENT: As of the Expansion Space Commencement Date, Section 1.04 of the Lease is revised as follows:

(a) the Rent Schedule for the Existing Premises is amended by deleting the rent to be paid for the "Partial Year (10/1/09 through 1/31/10) and adding the following:

	Minimum Annual Rent	Monthly Minimum Rent	Annual Rent Per Rentable Square Foot
Year 6 10/01/09 through 9/30/10	114,930.82	$ 9,577.57	$ 11.25

and

(b) Subject to the Rent Abatement set forth below, Minimum Annual Rent for the Expansion Space shall be paid in monthly installments of Minimum Monthly Rent as follows:

	Minimum Annual Rent	Monthly Minimum Rent	Annual Rent Per Rentable Square Foot
Initial Partial Year (7/01/15 through 9/30/05	N/A	$ 4,090.93	$ 9.59
Year 1 (10/01/05 through 9/30/06)	$ 49,091.21	$ 4,090.93	$ 9.59
Year 2 (10/02/06 through 9/30/07)	$ 50,319.77	$ 4,193.31	$ 9.83
Year 3 (10/01/07 through 9/30/08)	$ 51,599.52	$ 4,299.96	$ 10.08
Year 3 (10/01/07 through 9/30/08)	$ 51,599.52	$ 4,299.96	$ 10.08
Year 4 (10/1/08 through 9/30/09)	$ 52,879.27	$ 4,406.61	$ 10.33
Year 5 (10/1/09 through 9/30/10)	$ 54,210.21	$ 4,517.52	$ 10.59

As of the Expansion Space Commencement Date, subject to the rent abatement set forth below, charges and sums based on the square footage of the Demised Premises, including but not limited to Tenant's proportionate share of Direct Expenses, shall be revised based on the increased size of the Demised Premises as of the Expansion Space Commencement Date.

7. Rent Abatement: Notwithstanding the rent chart for the Expansion Space set forth above, no Monthly Minimum Rent or Direct Expenses attributable to the Lab Space shall be due or payable until September 1,2005. In addition, (i) no Monthly Minimum Rent (or portion of Minimum Annual Rent) shall be due on the Office Space for the first three months after the Expansion Space Commencement Date, and (ii) no Monthly Minimum Rent (or portion of Minimum Annual Rent) shall be due on the Lab Space for the months of September, October, or November 2005, and the same shall constitute "Abatement Months" under Section 1.06 of the Lease. Tenant shall pay its proportionate share of Direct Expenses on the Office Space starting on the Expansion Space Commencement Date and shall pay its proportionate share of Direct Expenses on the Lab Space starting September 1, 2005. As of December 1, 2005, Tenant shall pay Monthly Minimum Rent and Tenant's proportionate share of Direct Expenses on the entire Demised Premises (as expanded herein) regardless of whether the Phase II Work has been substantially completed.

8. HVAC: Landlord represents and warrants that the existing HVAC units serving the Expansion Space are in good working order and shall remain so for a period of one (1) year from the Expansion Space Commencement Date, and Landlord shall pay for the cost of replacement or repair of the HVAC units serving the Expansion Space during such one year period. Notwithstanding the foregoing, Tenant shall be responsible for the cost of all standard maintenance of the HVAC system serving the Expansion Space (even during the one year period starting on the Expansion Space Commencement Date). After one year from the Expansion Space Commencement Date, Tenant shall not be responsible for the payment of more than $2,000 per HVAC unit per year for repairs to and replacements of any units or parts for the remainder of the Term of this Lease. Notwithstanding anything in this paragraph to the contrary, Tenant shall be responsible for the cost of any maintenance, repair or replacement to the extent required because of the intentional misconduct or misuse of the HVAC system by Tenant, its employees, agents, contractors or invitees.

9. Option to Expand. The "Options to Expand" set forth in Exhibit C to the Lease (including the terms and conditions set forth in Paragraphs 1 through 5 of Exhibit C) shall not be affected by this Amendment and shall continue in full force and effect; provided however, (i) the parties acknowledge that the provisions which refer to Tenant's exercise (or non-exercise) of the option(s) within one (1) year after Tenant occupies the "Demised Premises" shall be construed to mean within one (1) year after Tenant occupies the Office Space and (ii) the Monthly Minimum Rent and Minimum Annual Rent for the "First Expansion Space" and "Second Expansion Space" as defined in Exhibit C to the Lease shall be at the annual rental rate (with the same increases) as is being charged on the Existing Premises.

10. Parking: As of the Expansion Space Commencement Date, Section 13.08 of the Lease, is revised to delete "twenty-one (21)" unassigned parking spaces and insert in its place "thirty-one (31)" unassigned parking spaces. The second paragraph of Section 13.08 is revised as of the Expansion Space Commencement Date to delete "three spaces" as VISITORS spaces and insert in its place "five spaces" as VISITORS spaces.

11. Brokerage: Tenant warrants that it has had no dealings with any broker or agent in connection with this Amendment to Lease, other than Dee Creech of NAI Carolantic Realty, and covenants to pay, hold harmless and indemnify Landlord from and against any and all cost, expense or liability for any compensation, commissions and charges claimed by any other broker or agent with respect to this Amendment to Lease or the negotiation thereof.

12. Security Deposit / Letter of Credit Provided that Tenant is not in default under this Lease as of the Expansion Space Commencement Date, then as of the Expansion Space Commencement Date "Section 1.07 - Security Deposit" of the Lease and Paragraph 6 on Exhibit C of the Lease is deleted and the following substituted in lieu of "Section 1.07 - Security Deposit":

> Section 1.07 - Security Deposit
>
> Landlord and Tenant agree that no security deposit shall be required in connection with the leasing of the Demised Premises; provided however, Landlord reserves the right to require a security deposit in connection with a future expansion of the Demised Premises.

13. Amendment: Except as herein amended, the terms and conditions of the Lease shall remain in full force and effect.

[remainder of page intentionally blank; signature page follows]

IN WITNESS WHEREOF, the parties hereto have caused this Second Amendment to Lease to be executed as a sealed instrument this the day first above written.

LANDLORD:

SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP, a North Carolina limited partnership

BY: SOUTHPORT BUSINESS PARK INVESTORS CORPORATION, General Partner

By: */s/ Robert T. Karp*
Robert T. Karp
Vice President

TENANT:

GENTRIS CORPORATION, a Delaware corporation

By: */s/ Michael P. Murphy*
Michael P. Murphy
President

EXHIBIT A-1 – Space Plan showing “Office Space” and “Lab Space”

[Intentionally omitted]

EXHIBIT A – Existing Premises and Expansion Space

[Intentionally omitted]

EXHIBIT B – "As Is" Space Plan

[Intentionally omitted]

EXHIBIT C – Proposed Space Plan for Phase I

[Intentionally omitted]

EXHIBIT D – Proposed Space Plan for Phase II

[Intentionally omitted]

EXHIBIT E – Improvements not included in Landlord's Work

[Intentionally omitted]

Exhibit 10.50

THIRD AMENDMENT TO LEASE

THIS THIRD AMENDMENT TO LEASE (the "Amendment"), made as of the 25th day of May, 2006, by and between**SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP,** a North Carolina limited partnership (the *"Landlord"),* and **GENTRIS CORPORATION,** a Delaware corporation (the *"Tenant").*

WITNESSETH

WHEREAS, Landlord and Tenant entered into a certain Lease dated as of June 12, 2004 and amended by letter agreement dated October 21,2004 (as amended, the *"Lease"),* for certain space known as Suite 400, consisting of approximately 10,207 square feet (as more particularly defined in the Lease, the*"Existing Premises")* in the Building located at 133 Southcenter Court, Morrisville, Wake County, North Carolina, as more particularly described in the Lease and

WHEREAS, Landlord and Tenant entered into an amendment of the Lease, Second Amendment to Lease, dated June 17, 2005 which expanded the Existing Premises by 5,119 square feet to a total of 15,326 and modified the terms of the "Option to Expand" found in Exhibit C of the Lease.

WHEREAS, Landlord and Tenant desire to modify the terms of the Lease to further modify the Option to Expand found in Exhibit C.

WHEREAS, Landlord gave Tenant a notice on December 14, 2005 that resulted in the termination of Tenant's right to expand.

NOW THEREFORE, in consideration of the premises contained herein, the sum of Ten Dollars ($ 10.00) and other good and valuable consideration, the mutual receipt and sufficiency of which are hereby acknowledged, Landlord and Tenant hereby amend the Lease as follows:

1. Option to Expand. The "Options to Expand" set forth in Exhibit C to the Lease (including the terms and conditions set forth in Paragraphs 1 through 5 of Exhibit C as modified by the Second Amendment to Lease) shall be modified as follows:

(a) Tenant's Option to Expand is hereby reinstated as if never terminated

(b) This revived Option to Expand shall terminate on October 1,2006 unless Landlord and Tenant have entered into a written amendment exercising either of its options to expand or upon notice by Landlord under Exhibit C - paragraph 5 and thereafter, Tenant fails to exercise its option.

(c) All of the terms and conditions of the Lease applicable to the First Expansion Space, including without limitation, Minimum Annual Rent, Monthly Minimum Rent, Annual Rent Per Square Rentable Foot, shall be negotiated in good faith by Landlord and Tenant.

2. Amendment: Except as herein amended, the terms and conditions of the Lease shall remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this Third Amendment to Lease to be executed as a sealed instrument this the day first above written.

LANDLORD:

SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP, a North Carolina limited partnership

BY: SOUTHPORT BUSINESS PARK INVESTORS CORPORATION, General Partner

By: */s/ Richard Sullivan*
Richard Sullivan
Vice President

TENANT:

GENTRIS CORPORATION, a Delaware corporation

By: */s/ Michael P. Murphy*
Michael P. Murphy, President

Appendix 1
Construction Reimbursement Agreement

[Intentionally omitted.]

Exhibit 10.51

FOURTH AMENDMENT TO LEASE

THIS FOURTH AMENDMENT TO LEASE (the "Amendment") made as of the 20th day of December, 2007, by and between SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP, a North Carolina limited partnership (the "Landlord") and GENTRIS CORPORATION, a Delaware corporation (the "Tenant").

WITNESSTH

WHEREAS, Landlord and Tenant entered into a certain Lease dated as of June 12, 2004 and amendment by letter agreement dated October 21, 2004, for certain space known as Suite 400 consisting of approximately 10,207 square feet (as more particularly defined in Lease, the "Existing Premises") in the Building located at 133 Southcenter Court, Morrisville, Wake County, North Carolina, as more particularly described in the Lease and

WHEREAS, Landlord and Tenant entered into an amendment of the Lease Second Amendment to Lease, dated June 17, 2005 which expanded the Existing Premises by 5,119 square feet, which is Suite 200 (hereinafter, the "Relinquished Space") to a total of 15,326, and increased the rent by letter agreement dated September 19, 2005;

WHEREAS, Landlord and Tenant modified the terms of the Lease with Third Amendment to Lease dated May 25, 2006 by reinstating the Option to Expand to October 1, 2006, which option has expired,

WHEREAS, Tenant wishes to terminate the Lease with respect to the Relinquished Space so that an affiliated company, Paragon Dx LLC may lease it;

NOW THEREFORE, in consideration of the premises contained herein, the sum of Ten Dollars ($10.00) and other good and valuable consideration, the mutual receipt and sufficiency of which is hereby acknowledged, the parties agree to amend the Lease by the addition of the following paragraphs to the indicated Sections:

1. **Page Two - Section 1.01 - The Demised Premises**

Add the following:

Effective as of January 1, 2008, the Demised Premises shall be reduced to approximately Ten Thousand Two Hundred and Seven (10,207) square feet (as measured from the centerline of all demising and exterior walls) of space located in the building and designated at Suite 400. The location of the Demised Premises effective as of January 1, 2008, shall be shown on Exhibit A attached hereto and incorporated by reference.

2. Page Three - Section 1.04 - Monthly Minimum Rent and Adjusted Monthly Minimum Rent.

Delete the following:

Year 4 10/01/07 through 9/30/08	$ 108,602.48	$ 9,050.21	$ 10.54
Year 5 10/01/08 through 9/30/09	$ 111,358.37	$ 9,279.86	$ 10.91
Partial Year 10/01/09 through 1/31/2010	N/A	$ 9,509.52	$ 11.18

and replace with the following:

Year 4 10/01/07 through 9/30/08	$ 109,419.04	$ 9,118.25	$ 10.72
Year 5 10/01/08- 9/30/09	$ 112,174.92	$ 9,347.91	$ 10.99
Year 6 10/01/09 - 9/30/2010	$ 114,930.82	$ 9,577.57	$ 11.26

3. There will be no abatement of rent with this amendment.

4 **Page 27 - Exhibit B - Description of Landlord's Work:**

All of Landlord's Work is complete and Tenant accepts the Demised Premises in an "as is" condition.

5. **Brokerage:** Tenant warrants that it has had no dealings with any broker or agent in connection this Fourth Amendment to Lease and covenants to hold harmless and indemnify Landlord from and against any and all cost, expense or liability for any compensation, commissions and charges claimed by any other broker or agent with respect to this Amendment to Lease or the negotiation thereof.

6. **Exhibit C - Special Provisions - Page 33**

Tenant acknowledges that all Options to Expand are null and void.

7. This amendment shall become effective as of the date of this Fourth Amendment to Lease as set forth above and is contingent upon the co-execution of a Lease between Southport Business Park and Paragon Dx LLC for the Relinquished Space.

8. All terms of the Lease which by their nature, would survive the expiration of the Lease, will survive after January 1, 2008 as between Landlord and Tenant for the Relinquished Space. These terms include, but are not limited to, the reconciliation of 2007 Direct Expenses and Tenant's obligations under Section 4.02, Hazardous Waste.

9 The Lease shall revert to the original parking language found in Section 13.08 of the Lease dated June 12, 2004

Except as herein amended, the terms and conditions of said Lease dated June 12, 2004 and amended by letter agreement dated October 21, 2004, Second Amendment to Lease dated June 17, 2005, letter agreement dated September 19, 2005, and Third Amendment to Lease dated May 25, 2006 shall remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this Fourth Amendment to Lease to be executed as a sealed instrument the date and year first above written.

LANDLORD:

Southport Business Park Limited Partnership, a North Carolina limited partnership

BY: Southport Business Park Investors Corporation, General Partner

By: _____
Richard G. Sullivan
Vice President

TENANT:

Gentris Corporation
a Delaware corporation

By: */s/ Dawn L. Bordeaux*
Dawn L. Bordeaux
Its: Vice President

EXHIBIT A – Existing Premises and Relinquished Space

[Intentionally omitted]

Appendix 1
Commencement Date Memorandum

[Intentionally omitted.]

Appendix 2
Letter, dated July 6, 2005

[Intentionally omitted.]

Appendix 3
Letter, dated December 14, 2005

[Intentionally omitted.]

Exhibit 10.52

FIFTH AMENDMENT TO LEASE

THIS FIFTH AMENDMENT TO LEASE (the "Amendment"), made as of the 15th day of June, 2009, by and between **SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP,** a North Carolina limited partnership (the "Landlord"), and **GENTRIS CORPORATION,** a Delaware corporation (the "Tenant").

WITNESSETH

WHEREAS, Landlord and Tenant entered into a certain Lease dated as of June 12, 2004, amended by letter agreement dated October 21,2004, by Second Amendment to Lease dated June 17, 2005, by Letter Agreement dated September 19, 2005, by Third Amendment to Lease dated May 25, 2006, and by Fourth Amendment to Lease dated December 20, 2007 (as amended, the "Lease"), for certain space known as Suite 400, consisting of approximately 10,207 square feet (as more particularly defined in the Lease, the "Existing Premises") in the Building located at 133 Southcenter Court, Morrisville, Wake County, North Carolina, as more particularly described in the Lease; and

WHEREAS, Landlord and Tenant desire to modify the terms of the Lease to extend the term of the Lease beyond the initial Term, to change the Monthly Minimum Rent and to amend certain other terms of the Lease.

NOW THEREFORE, in consideration of the premises contained herein, the sum of Ten Dollars ($10.00) and other good and valuable consideration, the mutual receipt and sufficiency of which is hereby acknowledged, the parties agree to amend the Lease as follows:

1. Page Two - Section 1.02 - Term of the Lease.

Delete September 30, 2010 (the date on which the Term was set to expire per the Second Amendment to Lease) and insert **December 31,2015** in its place.

2. Page Three - Section 1.04 - Monthly Minimum Rent and Adjusted Monthly Minimum Rent.

Effective July 1, 2009, Tenant's Minimum Annual Rent, Monthly Minimum Rent, and the rental rate per rentable square foot, shall be as set forth on the following chart:

(07/01/10 through 06/30/11)	**$ 109,010.76**	**$ 9,084.23(*)**	**$ 10.68**
(07/01/11 through 06/30/12)	**$ 111,766.65**	**$ 9,313.89**	**$ 10.95**
(07/01/12 through 06/30/13)	**$ 114,522.54**	**$ 9,543.55**	**$ 11.22**
(07/01/13 through 06/30/14)	**$ 117,380.50**	**$ 9,781.71**	**$ 11.50**
(07/01/14 through 06/30/15)	**$ 120,340.53**	**$ 10,028.38**	**$ 11.79**
(07/01/15 through 12/31/15)	**N/A**	**$ 10,275.05**	**$ 12.08**

* See Section 3 below regarding rent reduction and rent abatement.

3. Page 4 - Section 1.06 - Rent Abatement.

Add the following at the end of Section 1.06:

Notwithstanding the rent chart set forth in Section 2 of the Fifth Amendment to Lease, Tenant shall pay one-half (1/2) Monthly Minimum Rent for the months of July 1,2009 through December 31, 2009, and no Monthly Minimum Rent for the months of October 1,2010 through December 31,2010; provided, however, that during such periods of rent reduction and rent abatement Tenant shall continue to pay any and all Additional Rent due under the Lease.

4. **Page 27 - Exhibit B - Description of Landlord's Work.**

Tenant acknowledges that Tenant is currently occupying the Premises and that all of the Landlord's Work is complete, and Tenant accepts the Demised Premises in an "as is" condition. Notwithstanding the foregoing, the Landlord will, at its expense, paint the office area only as delineated on Exhibit B attached hereto.

5. **Page 33 - Exhibit C - Special Provisions**

Add the following:

Right of First Offer:

Provided no Event of Default by Tenant has occurred, then throughout the Term of this Lease expiring on December 31, 2015, Tenant shall have a onetime right of first offer to lease Suite 200 (as shown on Exhibit A attached hereto) containing approximately 5,119 rentable square feet (the "Expansion Space"). Upon the expiration or termination of the now existing lease for the Expansion Space (including any renewals or extensions thereof), Landlord shall notify the Tenant in writing and provide Tenant with a copy of the written proposal (herein "Proposal") containing the terms and conditions under which Landlord proposes to lease the Expansion Space to Tenant. Tenant may exercise its right to lease the Expansion Space on the terms and conditions set forth in the Proposal by (a) giving Landlord written notice of Tenant's acceptance of the Expansion Space on the terms and conditions contained in the Proposal on or before ten (10) business days after Landlord delivers to Tenant a copy of the Proposal; and (b) executing either a new lease for the Expansion Space or a lease amendment incorporating the Expansion Space into this Lease on the terms and conditions contained in the Proposal, on or before fifteen (15) business days after Landlord delivers the Proposal to Tenant. If Tenant fails to give Landlord notice of its acceptance of the Proposal and enter into the new lease or lease amendment within the proscribed time, the Tenant's right of first offer granted in this paragraph shall terminate. Upon such termination, Tenant shall have no further rights with regard to the Expansion Space. Notwithstanding anything to the contrary contained herein, this right of first offer may be exercised by Tenant only, but not by its assigns or sublessees.

6. **Brokerage: Tenant warrants that it has had no dealings with any broker or agent in connection with this Fifth Amendment to Lease, other than Aldene E. "Dee" Creech Osborne and John Webster of NAI Carolantic Realty and Mathew Cooke and Bill Sandridge of Jones Lang LaSalle, and covenants to pay, hold harmless and indemnify Landlord from and against any and all cost, expense or liability for any compensation, commissions and charges claimed by any other broker or agent with respect to this Fifth Amendment to Lease or the negotiation thereof.**

7. **Amendment: Except as herein amended, the terms and conditions of the Lease shall remain in full force and effect.**

IN WITNESS WHEREOF, the parties hereto have caused this Fifth Amendment to Lease to be executed as a sealed instrument this the day first above written.

LANDLORD:

Southport Business Park Limited Partnership, a North Carolina limited partnership

BY: Southport Business Park Investors Corporation, General Partner

By: */s/ Richard G. Sullivan*
Richard G. Sullivan
Vice President

TENANT:

Gentris Corporation
a Delaware corporation

By: */s/ Dawn L. Bordeaux*
Dawn L. Bordeaux, Vice President

EXHIBIT A – Site Plan and Building Plan

[Intentionally omitted]

EXHIBIT B to Fifth Amendment to Lease

[Intentionally omitted]

Exhibit 10.53

SIXTH AMENDMENT TO LEASE

THIS SIXTH AMENDMENT TO LEASE (the "Sixth Amendment to Lease"), made as of the 3rd day of June, 2010, by and between **SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP,** a North Carolina limited partnership (the "Landlord"), and **GENTRIS CORPORATION,** a Delaware corporation (the "Tenant").

WITNESSETH

WHEREAS, Landlord and Tenant entered into a certain Lease Agreement dated as of June 12,2004, amended by letter agreement dated October 21,2004, by Second Amendment to Lease dated June 17, 2005, by Letter Agreement dated September 19, 2005, by Third Amendment to Lease dated May 25,2006, by Fourth Amendment to Lease dated December 20, 2007, and by Fifth Amendment to Lease dated June 15, 2009 (as amended, collectively, the "Lease"), for certain space known as Suite 400 (the "Original Space"), in the Building located at 133 Southcenter Court, Morrisville, Wake County, North Carolina, as more particularly described in the Lease; and

WHEREAS, Landlord and Tenant desire to modify the terms of the Lease to add 5,119 square feet to the Demised Premises, to change the Monthly Minimum Rent and to amend certain other terms of the Lease.

NOW THEREFORE, in consideration of the premises contained herein, the sum of Ten Dollars ($10.00) and other good and valuable consideration, the mutual receipt and sufficiency of which is hereby acknowledged, the parties agree to amend the Lease as follows:

1. Page Two - Section 1.01 - Demised Premises

Add the following:

Effective as of the day after the date on which the tenant currently occupying the Expansion Space (as hereinafter defined) vacates such space and returns possession thereof to Landlord (the "Expansion Space 2nd Commencement Date"), the Demised Premises shall be increased to include an additional Five Thousand One Hundred Nineteen (5,119) square feet (as measured from the centerline of all demising and exterior walls) in the Building, shown on EXHIBIT A, attached hereto and incorporated herein by reference (the "Expansion Space"). As of the Expansion Space 2nd Commencement Date, the Demised Premises leased pursuant to the Lease shall contain a total of Fifteen Thousand Three Hundred Twenty Six (15,326) rentable square feet. Tenant agrees to execute and deliver a memorandum of acceptance of Expansion Space on the Expansion Space 2nd Commencement Date, which memorandum shall confirm the actual date of the Expansion Space 2nd Commencement Date.

2. Page Three - Section 1.04 - Monthly Minimum Rent and Adjusted Monthly

Minimum Rent.

As of the Expansion Space 2nd Commencement Date, delete the following:

	Minimum Annual Rent	Monthly Minimum Rent	Per Rentable Square Foot
(07/01/09 through 06/30/10)	**$ 106,356.94**	**$ 8,863.08(*)**	**$ 10.42**
(07/01/10 through 06/30/11)	**$ 109,010.76**	**$ 9,084.23(*)**	**$ 10.68**
(07/01/11 through 06/30/12)	**$ 111,766.65**	**$ 9,313.89**	**$ 10.95**
(07/01/12 through 06/30/13)	**$ 114,522.54**	**$ 9,543.55**	**$ 11.22**
(07/01/13 through 06/30/14)	**$ 117,380.50**	**$ 9,781.71**	**$ 11.50**
(07/01/14 through 06/30/15)	**$ 120,340.53**	**$ 10,028.38**	**$ 11.79**
(07/01/15 through 12/31/15)	**N/A**	**$ 10,275.05**	**$ 12.08**

* See Section 3 below regarding rent reduction and rent abatement.

And insert the following:

	Minimum Annual Rent	Monthly Minimum Rent	Per Rentable Square Foot
(07/01/09 through 06/30/10) the Expansion Space 2nd Commencement Date)	N/A	**$ 8,863.08(*)**	**$ 10.42**
(the Expansion Space 2nd Commencement Date through 06/30/10	N/A	**$ 13,512.84(*)**	**$ 10.58**
(07/01/10 through 06/30/11)	**$ 164,807.86**	**$ 13,733.99**	**$ 10.75**
(07/01/11 through 06/30/12)	**$ 167,819.70**	**$ 13,984.98**	**$ 10.95**
(07/01/12 through 06/30/13)	**$ 172,015.19**	**$ 14,334.60**	**$ 11.22**
(07/01/13 through 06/30/14)	**$ 176,315.57**	**$ 14,692.96**	**$ 11.50**
(07/01/14 through 06/30/15)	**$ 180,723.46**	**$ 15,060.29**	**$ 11.79**
(07/01/15 through 12/31/15)	**$ 185,241.55**	**$ 15,436.80**	**$ 12.09**

***As of the Expansion Space 2nd Commencement Date, subject to the rent abatement set forth below, charges and sums based on the square footage of the Demised Premises, including but not limited to Tenant's proportionate share of Direct Expenses, shall be revised based on the increased size of the Demised Premises as of the Expansion Space 2nd Commencement Date.**

3. Page 4 - Section 1.06 - Rent Abatement.

Add the following at the end of Section 1.06:

Notwithstanding the rent chart set forth in Section 2 of the Sixth Amendment to Lease, Monthly Minimum Rent for the period from October 1,2010 through December 31,2010 shall be abated and during the period from January 1,2011 through March 31,2011, Four Thousand Six Hundred Forty Nine and 76/100 Dollars ($4,649.76) shall be abated; *provided, however,* that during such periods of abatement Tenant shall continue to pay any and all Direct Expenses due under the Lease.

4. Page 27 - Exhibit B - Description of Landlord's Work.

The Expansion Space will be taken in "as is" condition (see Exhibit B-l). The Expansion Space and the Original Space will be connected by opening up the hallway (see Exhibit B-2). There will be no other Landlord's Work.

5. **Brokerage:** Tenant represents and warrants to Landlord that it has had no dealings with any broker or agent in connection with this Sixth Amendment to Lease, other than Aldene E. "Dee" Creech Osborne and John Webster of NAI Carolantic Realty and Matthew Cooke and Bill Sandridge of Jones Lang LaSalle, and covenants to pay, hold harmless and indemnify Landlord from and against any and all cost, expense or liability for any compensation, commissions and charges claimed by any other broker or agent with respect to this Sixth Amendment to Lease or the negotiation thereof.

6. **Parking:** As of the Expansion Space 2nd Commencement Date, Section 13.08 of the Lease is revised to delete **"Twenty one (21)"** unassigned parking spaces and insert in its place **"thirty-one (31)"** unassigned parking spaces. The second paragraph of Section 13.08 is revised as of the Expansion Space 2nd Commencement Date to delete **"three spaces"** as VISITORS spaces and insert in its place **"five spaces"** as VISITORS spaces.

7. **Delivery of Expansion Space:** Tenant acknowledges and agrees that Landlord shall not be held liable for failure to deliver the Expansion Space as a result of the existing tenant's failure to timely vacate the Expansion Space or such tenant's failure to remove its equipment and personal property from the Expansion Space.

8. **Contingent Space:** Notwithstanding any other provision of this Lease, as amended, to the contrary, in the event of a natural disaster that damages the Demised Premises, as expanded hereby, such that Tenant cannot operate its business out of the Demised Premises, Landlord will make commercially reasonable efforts to provide Tenant with approximately 2,000 square feet of "Alternate Space" on the Property (as defined in the Lease, as amended), the location of which shall be selected by Landlord, in Landlord's sole discretion. In the event that Landlord provides Alternate Space to Tenant under this section, Landlord and Tenant shall execute a rental or lease agreement for such Alternate Space for so long as Tenant is unable to operate its business out of the Demised Premises because of the damage to the Demised Premises caused by such natural disaster, and Tenant shall pay fair market rent for such Alternate Space.

9. **No Further Right of First Offer;** Tenant acknowledges and agrees that the Right of First Offer set forth on page 33, Exhibit C to the Lease, pursuant to the Fifth Amendment to Lease is hereby deleted in its entirety.

10. **Definitions:** Capitalized terms used but not defined herein shall have the meaning given to such terms in the Lease, as amended.

11. **Amendment:** Except as herein amended, the terms and conditions of the Lease shall remain in full force and effect.

12. **Counterparts:** This Sixth Amendment to Lease may be executed in one or more counterparts, each of which shall constitute an original, but which together shall constitute one document.

[The signature page follows.]

IN WITNESS WHEREOF, the parties hereto have caused this Sixth Amendment to Lease to be executed this the day first above written.

LANDLORD:

Southport Business Park Limited Partnership,
a North Carolina limited partnership

BY: Southport Business Park Investors Corporation,
General Partner

By: */s/ Richard G. Sullivan*
Richard G. Sullivan
Vice President

TENANT:

Gentris Corporation
a Delaware corporation

By: */s/ Dawn L. Bordeaux*
Dawn L. Bordeaux, Vice President

EXHIBIT A – Site Plan and Building Plan

[Intentionally omitted]

EXHIBIT B-1 to Sixth Amendment to Lease – "As is" Space Plan

[Intentionally omitted]

EXHIBIT B-2 to Sixth Amendment to Lease – New Space Plan

[Intentionally omitted]

Appendix 1
Bill of Sale

[Intentionally omitted.]

Exhibit 10.54

SEVENTH AMENDMENT TO LEASE

THIS SEVENTH AMENDMENT TO LEASE (the "Seventh Amendment to Lease"), made as of the 20th day of October, 2010, by and between **SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP**, a North Carolina limited partnership (the "Landlord"), and **GENTRIS CORPORATION**, a Delaware corporation (the "Tenant"),

WITNESSETH

WHEREAS, Landlord and Tenant: entered into a certain lease dated as of June 12, 2004, amended by letter agreement dated October 21, 2004, by Second Amendment to Lease dated June 17, 2005, by Letter Agreement dated: September 19, 2005, by Third Amendment to Lease dated May 25, 2006, by Fourth Amendment to Lease dated December 20, 2007, by Fifth Amendment to Lease dated June 15, 2009, and by Sixth Amendment to Lease dated June 3, 2010 (collectively, the "Lease"), for certain space known as Suite 400, in the Building located at 133 Southcenter Court, Morrisville, Wake County, North Carolina, as more particularly described in the Lease; and

WHEREAS, Landlord and Tenant desire to amend certain terms of the Lease.

NOW THEREFORE, in consideration of the premises contained herein, the sum of Ten Dollars ($10.00) and other good and valuable consideration, the mutual receipt and sufficiency of which is hereby acknowledged, the parties agree to amend the Lease as follows:

1. Page Thirty Three - Exhibit C - Special Provisions

Add the following:

Right of First Refusal

Provided no uncured Event of Default by Tenant has occurred, Tenant shall have an ongoing right of first refusal once in any twelve month period, to lease Suite 100 (as shown on Exhibit A, which is incorporated herein by reference) containing 5,048 rentable square feet and is located adjacent to the Demised Premises (the "Second Expansion Space"), Landlord shall provide Tenant the opportunity' to lease the Second Expansion Space prior to any other prospective tenants^ excluding the current tenant of the Second Expansion Space, by providing Tenant with a copy of the first written proposal to lease the space that is given to a bonafide, prospective tenant (the "Bonafide Proposal"). If Tenant desires to lease the Second Expansion Space under the terms of the Bonafide Proposal, Tenant must (1) notify Landlord in writing of its acceptance of the terms of the Bonafide Proposal within ten (10) business days of receipt of the Bonafide Proposal, and (2) execute a lease amendment incorporating the Second Expansion Space into the Lease on the terms and conditions contained in the Bonafide Proposal within fifteen (15) business days of Landlord's receipt of Tenant's notice. If Tenant fails to give Landlord notice of its acceptance of the terms of the Bonafide Proposal or enter into a lease amendment within the prescribed time, Tenant's right to lease the Second Expansion Space granted in this paragraph shall not be available to the Tenant for an addition twelve months from the date of Landlord's written notice to Tenant of a Bonafide Proposal and Tenant shall have no further rights with regard to the Second Expansion Space until twelve months from the Landlord's written notice to Tenant of a Bonafide Proposal. After that twelve month period, Landlord will again give Tenant the same notice, copy of proposal, and response times as listed above. This cycle shall repeat itself until the now current Term expires or the Second Expansion Space is leased to a third party, after which Landlord's obligation to offer the Second Expansion Space to Tenant shall cease.

Right of First Offer

1. Provided no uncured Event of Default by Tenant has occurred, Tenant shall have the one-time right of first offer to lease Suite 600 (as shown on Exhibit A, which is incorporated herein by reference) containing 4,100 rentable square feet and is located adjacent to the Demised Premises (the "Third Expansion Space"). Landlord shall provide Tenant the opportunity to lease the Third Expansion Space prior to any other prospective tenants, excluding the current tenant of the Third Expansion Space, by providing Tenant with a proposal to lease the Third Expansion Space (the "Third Expansion Space Proposal"). If Tenant desires to lease the Third Expansion Space Tenant must, within fifteen (15) business days of receipt of the Third Expansion Space Proposal, either notify Landlord in writing of its acceptance of the terms of the Third Expansion Space Proposal or negotiate revised terms to the Third Expansion Space Proposal that are acceptable to Landlord and Tenant (the "Agreed Upon Third Expansion Space Proposal). Additionally, within another fifteen (15) business days, Tenant must execute a lease amendment incorporating the Third Expansion Space into the Lease on the terms and conditions contained in the agreed upon Third Expansion Space Proposal or Agreed Upon Third Expansion Space Proposal. If Tenant fails to give Landlord notice of its acceptance of the terms of the Third Expansion Space Proposal or Agreed Upon Third Expansion Space Proposal and enter into a lease amendment within the prescribed time, Tenant's right to lease the Third Expansion Space granted in this paragraph shall terminate and Tenant shall have no further rights with regard to the Third Expansion Space.

   Provided no uncured Event of Default by Tenant has occurred, Tenant shall have the one-time right of first offer to lease Suite 700 (as shown on Exhibit A, which is incorporated herein by reference) containing 1.7,816 rentable square feet and is located adjacent to the Demised Premises (the "Fourth Expansion Space"). Landlord shall provide Tenant the opportunity' to lease the Fourth Expansion Space prior to any other prospective tenants, excluding the current tenant of the Fourth Expansion Space, by providing Tenant with a proposal to lease the Fourth Expansion Space (the "Fourth Expansion Space Proposal"). If Tenant desires to lease the Fourth Expansion Space Tenant must, within fifteen (15) business days of receipt of the Fourth Expansion Space Proposal, either notify Landlord in writing of its acceptance of the terms of the Fourth Expansion Space Proposal or negotiate revised terms to the Fourth Expansion Space Proposal that are acceptable to Landlord and Tenant (the "Agreed Upon Fourth Expansion Space Proposal). Additionally, within another fifteen (15) business days, Tenant must execute a lease amendment incorporating the Fourth Expansion Space into the Lease on the terms and conditions contained in the agreed upon Fourth Expansion Space Proposal or Agreed Upon Fourth Expansion Space Proposal. If Tenant fails to give Landlord notice of its acceptance of the terms of the Fourth Expansion Space Proposal or Agreed Upon Fourth Expansion Space Proposal and enter into a lease amendment within the prescribed time, Tenant's right to lease the Fourth Expansion Space granted in this paragraph shall terminate and Tenant shall have no further rights with regard to the Fourth Expansion

Except as herein amended, the terms and conditions of the Lease shall remain in full force and effect. Each person signing as Landlord or Tenant warrants and represents that she or he is authorized to execute and deliver' this Seventh Amendment to Lease and to make it a binding obligation of Landlord or Tenant,

IN WITNESS WHEREOF, the parties hereto have caused this Seventh Amendment to Lease to be executed as a sealed instrument this the day first above written.

LANDLORD:

SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP,
a North Carolina limited partnership

BY: SOUTHPORT BUSINESS PARK INVESTORS CORPORATION, General Partner

By: */s/ Richard G. Sullivan*
Richard Sullivan
Vice President

TENANT:

GENTRIS CORPORATION,
a Delaware corporation

By: */s/ Dawn L. Bordeaux*
Dawn L. Bordeaux, Vice President

EXHIBIT A – Second Expansion Space

[Intentionally omitted]

Exhibit 10.55

EIGHTH AMENDMENT TO LEASE

THIS EIGHTH AMENDMENT TO LEASE (the "Eighth Amendment to Lease"), made as of the 21th day of July, 2011, by and between **SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP,** a North Carolina limited partnership (the "Landlord"), and **GENTRIS CORPORATION,** a Delaware corporation (the "Tenant").

WITNESSETH

WHEREAS, Landlord and Tenant entered into a certain lease dated as of June 12, 2004, amended by letter agreement dated October 21, 2004, by Second Amendment to Lease dated June 17, 2005, by Letter Agreement dated September 19, 2005, by Third Amendment to Lease dated May 25, 2006, by Fourth Amendment to Lease dated December 20, 2007, by Fifth Amendment to Lease dated June 15, 2009, by Sixth Amendment to Lease dated June 3, 2010, and by Seventh Amendment to Lease dated October 26, 2010 (collectively, the "Lease"), for certain space known as Suite 400, in the Building located at 133 Southcenter Court, Morrisville, Wake County, North Carolina, as more particularly described in the Lease; and

WHEREAS, the current Demised Premises consists of Fifteen Thousand Three Hundred Twenty Six (15,326) rentable square feet (the "Existing Demised Premises")

WHEREAS, Landlord and Tenant desire to add Nine Thousand Five Hundred Eighty (9,580) square feet to the Demised Premises, to change the Monthly Minimum Rent, to extend the Term, and to amend certain terms of the Lease.

NOW THEREFORE, in consideration of the premises contained herein, the sum of Ten Dollars ($10.00) and other good and valuable consideration, the mutual receipt and sufficiency of which is hereby acknowledged, the parties agree to amend the Lease as follows:

1. **Page Two - Section 1.01 - Demised Premises**

Add the following:

Effective as of the day in which the Third Expansion Space commences (the "Third Expansion Space Commencement Date"), the Demised Premises shall be increased by the addition of the Third Expansion Space, which will add an additional Four Thousand Three Hundred Fifty (4,350) square feet (as measured by the BOMA dripline standards) to the Demised Premises and is shown on EXHIBIT A, attached hereto and incorporated herein by reference. As of the Third Expansion Space Commencement Date, the Demised Premises leased pursuant to the Lease shall contain a total of Nineteen Thousand Six Hundred Seventy Six (19,676) rentable square feet. The Third Expansion Space Commencement Date will be January 1, 2012 (so long as Landlord's Third Expansion Space Work is substantially complete) or upon substantial completion of Landlord's Third Expansion Space Work (as hereinafter defined), whichever is earlier. Landlord's substantial completion of

Landlord's Third Expansion Space Work is subject to Tenant Delay, as defined below. Tenant agrees to execute and deliver a memorandum of acceptance of Third Expansion Space on the Third Expansion Space Commencement Date, which memorandum shall confirm the actual date of the Third Expansion Space Commencement Date

Effective as of the day in which the Second Expansion Space commences (the "Second Expansion Space Commencement Date"), the Demised Premises shall be increased by the addition of the Second Expansion Space, which will add an additional Five Thousand Two Hundred Thirty (5,230) square feet (as measured by the BOMA dripline standards) to the Demised Premises and is shown on EXHIBIT A, attached hereto and incorporated herein by reference. As of the Second Expansion Space Commencement Date, the Demised Premises leased pursuant to the Lease shall contain a total of Twenty Four Thousand Nine Hundred Six (24,906) rentable square feet. The Second Expansion Space Commencement Date will be June 1,2012 (so long as Landlord's Second Expansion Space Work is substantially complete) or upon substantial completion of Landlord's Second Expansion Space Work (as hereinafter defined), whichever is earlier. Landlord's substantial completion of Landlord's Second Expansion Space Work is subject to Tenant Delay, as defined below. Tenant agrees to execute and deliver a memorandum of acceptance of the Second Expansion Space on the Second Expansion Space Commencement Date, which memorandum shall confirm the actual date of the Second Expansion Space Commencement Date

Notwithstanding anything in this Eighth Amendment to Lease to the contrary, if Tenant shall cause any delays in the completion of the Landlord's Third Expansion Space Work or Landlord's Second Expansion Space Work, including but not limited to (i) delay caused because Tenant's requirements for materials or installations are different from Landlord's building standard (the basic improvement package Landlord offers to tenants of the Property), (ii) delay in the payment of any sum due from Tenant pertaining to Landlord's Third Expansion Space Work or Landlord's Second Expansion Space Work, if any, (iii) delay in performance or completion by a party employed by Tenant, (iv) delay by reason of compliance with applicable laws arising from Tenant's design of the improvements set forth on Exhibit B-2, (v) delay by reason of changes in the work ordered by Tenant, or (vi) delay by Tenant in providing or approving plans, specifications or other items necessary for Landlord *to* perform Landlord's Third Expansion Space Work or Landlord's Second Expansion Space Work (individually and collectively, a "Tenant Delay"), then the Third Expansion Space Commencement Date or Second Expansion Space Commencement Date (as applicable) shall be the date Landlord would have completed Landlord's Third Expansion Space Work or Landlord's Second Expansion Space Work (as applicable) had it not been for the Tenant Delay and Tenant's obligations hereunder including the obligation to pay rent shall commence even though occupancy of the Third Expansion Space or Second Expansion Space (as applicable) has not been delivered to Tenant.

2. **Page Three - Section 1.04 - Monthly Minimum Rent and Adjusted Monthly Minimum Rent.**

As of the Third Expansion Space Commencement Date, **delete the following:**

	Minimum Annual Rent	Monthly Minimum Rent	Per Rentable Square Foot
(07/01/11 through 06/30/12)	$ 167,819.70	$ 13,984.98	$ 10.95
(07/01/12 through 06/30/13)	$ 172,015.19	$ 14,334.60	$ 11.22
(07/01/13 through 06/30/14)	$ 176,315.57	$ 14,692.96	$ 11.50
(07/01/14 through 06/30/15)	$ 180,723.46	$ 15,060.29	$ 11.79
(07/01/15 through 12/31/15)	$ 185,241.55	$ 15,436.80	$ 12.09

***As of the Expansion Space 2nd Commencement Date, subject to the rent abatement set forth below, charges and sums based on the square footage of the Demised Premises, including but not limited to Tenant's proportionate share of Direct Expenses, shall be revised based on the increased size of the Demised Premises as of the Expansion Space 2nd Commencement Date.**
And insert the following:

Date Range	Rentable Square Feet	Minimum Annual Rent	Monthly Minimum Rent	Per Rentable Square foot
07/01/2011 through 12/31/2011	15,326	N/A	$ 13,984.98	$ 10.95
01/1/2012* through 5/31/2012	19,676	N/A	$ 17,954.35	$ 10.95
06/01/2012* through 05/31/2013	24,906	$ 272,720.70	$ 22,726.73	$ 10.95
06/01/2013 through 05/31/2014	24,906	$ 279,538.72	$ 23,294.89	$ 11.22
06/01/2014 through 05/31/2015	24,906	$ 286,527.19	$ 23,877.27	$ 11.50
06/01/2015 through 05/31/2016	24,906	$ 293,690.37	$ 24,474.20	$ 11.79
06/01/2016 through 05/31/2017	24,906	$ 301,032.62	$ 25,086.05	$ 12.09
06/01/2017 through 05/31/2018	24,906	$ 308,558.44	$ 25,713.20	$ 12.39
06/01/2018 through 05/31/2019	24,906	$ 316,272.40	$ 26,356.03	$ 12.70

*** If the Third Expansion Space Commencement Date is a date other than January 1,2012 or the Second Expansion Space Commencement date is other than June 1, 2012, the above table shall be adjusted and prorated so that the prorated Monthly Minimum Rent is paid on the, then-current, rentable square footage in the Demised Premises.**

3. **Page 4 - Section 1.06 - Rent Abatement.**

Add the following at the end of Section 1.06:

Notwithstanding the rent chart set forth in Section 2 of this Eighth Amendment to Lease, no Monthly Minimum Rent shall be due for the following months (the "Abatement Months"):

a. The Monthly Minimum Rent for the Third Expansion Space shall abate for the first seven (7) months after the Third Expansion Space Commencement Date. The amount of such abatement is Three Thousand Nine Hundred Sixty Nine and 38/100ths dollars ($3,969.38) per month (which is 4,350 x $10.95 /12)

b. The Monthly Minimum Rent for the Second Expansion Space shall abate for the first seven (7) months after the Second Expansion Space Commencement Date. The amount of such abatement is Four Thousand Seven Hundred Seventy Two and 38/100ths dollars ($4,772.38) per month (which is 5,230 x $10.95/12)

c. The Monthly Minimum Rent for the Existing Demised Premises shall abate for the first three (3) months after the Second Expansion Space Commencement Date. The amount of such abatement is Thirteen Thousand Three Hundred Twenty Six and 98/100ths dollars ($13,984.98) per month (which is 15,326 x $10.95/12)

During the Abatement Months, Tenant shall continue to pay any and all Direct Expenses due under the Lease. The entire Monthly Minimum Rents that were abated shall immediately become due and payable upon the occurrence of an Event of Default, past all applicable cure periods, by Tenant under this Lease.

4. **Page 4 - Section 1.07 - Security Deposit** shall now read

Tenant hereby agrees to pay to Landlord with or prior to the Tenant's execution of this Eighth Amendment to Lease the sum of: Twenty Two Thousand Seven Hundred Twenty Six & 73/100 th DOLLARS ($22,726.73), (hereinafter referred to as the "Security Deposit"), which sum Landlord shall retain as security for the performance by Tenant of each of its obligations hereunder. Such Security Deposit shall be held, applied and refunded in the manner and subject to the conditions hereinafter provided in Section 13.03 of the Lease.

5. **Page 27 - Exhibit B - Description of Landlord's Work.**

The Third Expansion Space and Second Expansion Space will be taken in "as is" condition as shown in Exhibit B-l, subject to Landlord's Third Expansion Space Work and Landlord's Second Expansion Space Work listed and shown on Exhibit B-2.

6. **Page 2 - Section 1.02 - Term of the Lease -** Delete December 31,2015 and insert **May 31,2019** in its place.

7. **Brokerage:** Tenant represents and warrants to Landlord that it has had no dealings with any broker or agent in connection with this Eighth Amendment to Lease, other than Aldene E. "Dee" Creech Osborne of NAI Carolantic Realty and Matthew Cooke of Jones Lang LaSalle Brokerage Inc., and covenants to pay, hold harmless and indemnify Landlord from and against any and all cost, expense or liability for any compensation, commissions and charges claimed by any other broker or agent with respect to this Eighth Amendment to Lease or the negotiation thereof.

8. **Parking:** As of the Third Expansion Space Commencement Date, Section 13.08 of the Lease is revised to delete **"Thirty one (31)"** unassigned parking spaces and insert in its place **"Forty five (45)"** unassigned parking spaces. As of the Second Expansion Space Commencement Date, Section 13.08 of the Lease is revised to delete **"Forty Five (45)"** unassigned parking spaces and insert in its place **"Fifty five (55)"** unassigned parking spaces.

9. **Delivery of Expansion Space:** Tenant acknowledges and agrees that Landlord shall not be held liable for failure to deliver the Third Expansion Space or the Second Expansion Space in a timely manner as a result of the existing tenant's failure to timely vacate that expansion space or such tenant's failure to remove its equipment and personal property from that expansion space. However, if the Third Expansion Space Commencement Date or Second Expansion Space Commencement Date are delayed due to the existing tenant's failure to remove its equipment and personal property from that expansion space, the Third Expansion Space Commencement Date or Second Expansion Space Commencement Date (as applicable) shall be delayed to reflect the existing tenant's delay in actually vacating the Third Expansion Space or Second Expansion Space.

10. **Existing Rights** Tenant acknowledges and agrees that the rights contained in the Seventh Amendment to Lease and the Right of First Offer on page 3 of the Fifth Amendment to Lease are hereby terminated.

11. **Right of First Offer** Provided no uncured Event of Default by Tenant has occurred, Tenant shall have the one-time right of first offer ("Right of First Offer") to lease all or specific portions of Suite 700 (the "Fourth Expansion Space") as shown on Exhibit A to this Eighth Amendment to Lease, which is incorporated herein by reference) containing an approximate total of Eighteen Thousand One Hundred and Sixty-five (18,165) rentable square feet and is located adjacent to the Demised Premises. Tenant may also choose to lease just the specific portion of the Fourth Expansion Space containing Seven Thousand Six Hundred Ninety Seven (7,697) square feet, ("Side A") shown on Exhibit A. Landlord shall provide Tenant this opportunity to lease the entire Fourth Expansion Space or Side A of the Fourth Expansion Space prior to any other prospective tenants, excluding the current tenant of the Fourth Expansion Space, by providing Tenant with a proposal (the "Fourth Expansion Space Proposal"). If Tenant desires to lease the Fourth Expansion Space or Side A, Tenant must, within fifteen (15) business days of receipt of the Fourth Expansion Space Proposal, either notify Landlord in writing of its acceptance of the terms of the Fourth Expansion Space Proposal or negotiate revised terms to the Fourth Expansion Space Proposal that are acceptable to Landlord and Tenant (the "Agreed Upon Fourth Expansion Space Proposal"). Additionally, within another fifteen (15) business days, Tenant must execute a lease amendment incorporating the Fourth Expansion Space or Side A into the Lease on the terms and conditions contained in the agreed upon Fourth Expansion Space Proposal or Agreed Upon

Fourth Expansion Space Proposal. If Tenant fails to give Landlord notice of its acceptance of the terms of the Fourth Expansion Space Proposal or Agreed Upon Fourth Expansion Space Proposal and enter into a lease amendment within the prescribed time, Tenant's right to lease the Fourth Expansion Space or Side A that is granted in this paragraph shall terminate and Tenant's only remaining rights with regard to the Fourth Expansion Space or Side A will be as listed in Section 12 below.

12. **Right of First Refusal.** Provided no uncured Event of Default by Tenant has occurred, Tenant shall have the ongoing right of first refusal to lease Suite 700. Landlord shall provide Tenant the opportunity to lease the Fourth Expansion Space prior to any other prospective tenants, excluding the current tenant of the Fourth Expansion Space, by providing Tenant with a copy of the first written proposal to lease the Fourth Expansion Space that is given to a bonafide, prospective tenant (the "Bonafide Proposal"). If Tenant desires to lease the Fourth Expansion Space under the terms of the Bonafide Proposal, Tenant must (1) notify Landlord in writing of its acceptance of the terms of the Bonafide Proposal within ten (10) business days of receipt of the Bonafide Proposal, and (2) execute a lease amendment incorporating the Fourth Expansion Space into the Demised Premises on the terms and conditions contained in the Bonafide Proposal within fifteen (15) business days of Landlord's receipt of Tenant's notice. If Tenant fails to give Landlord notice of its acceptance of the terms of the Bonafide Proposal or enter into a lease amendment within the prescribed time, Tenant's right to lease the Fourth Expansion Space granted in this paragraph shall be suspended for Six (6) months from the time Landlord provided the copy of the Bonafide Proposal to Tenant and Tenant shall have no further rights with regard to the Fourth Expansion Space during that period (the "Suspension Period"). If the suspension period expires and Landlord has not yet leased the Fourth Expansion Space to a third party, Landlord will once again give Tenant the next Bonafide Proposal that it offers to a prospective tenant and the same cycle will repeat until the Fourth Expansion Space is leased to a third party, after which Tenant shall have no further rights to the Fourth Expansion Space.

13. **Option to Extend.** Provided that there is no then outstanding uncured Event of Default by Tenant and Tenant is still in possession of the Demised Premises, Tenant shall have two (2) options to extend the Term, for a period of five (5) years each (an "Extended Term"). The notice to extend the Term (the "Extension Notice") must be given by Tenant to Landlord in writing on or before two hundred seventy (270) days prior to expiration of the then-current Term (failure to give notice being an absolute bar to any rights on the part of Tenant to so extend). The Monthly Minimum Rent for the first year of each Extended Term will be the lower of:

(i) the Monthly Minimum Rent for the last month of the Term, or

(ii) the fair market monthly rental value of the Demised Premises as compared to similar flex buildings in the Raleigh - Durham market, taking into account the existing improvements in the Demised Premises and the tenant improvement allowances, rent concessions, and rent abatements given to tenants of similar size and rent credit as Tenant.

With either (i) or (ii), the Monthly Minimum Rent for each succeeding year of an Extended Term shall be two and one half percent (2.5%) higher than the last month of the previous year. If Landlord and Tenant are unable to agree upon the then prevailing fair market rate as indicated in (ii) above, within thirty (30) days after Landlord's receipt of the Extension Notice, then Tenant shall have a further fifteen (15) days to either accept the Monthly Minimum Rents as determined by (i) above or withdraw its Extension Notice. If Landlord and Tenant do not agree on a fair market rate within thirty (30) days and Tenant does not withdraw its Extension Notice within fifteen days, Tenant will be deemed to have selected (i) and the Term will be extended for five (5) years at two and one half percent (2.5%) increases in Monthly Minimum Rent for each additional year.

14. **Definitions;** Capitalized terms used but not defined herein shall have the meaning given to such terms in the Lease, as amended.

15. **Amendment;** Except as herein amended, the terms and conditions of the Lease shall remain in full force and effect.

16. **Counterparts:** This Eighth Amendment to Lease may be executed in one or more counterparts, each of which shall constitute an original, but which together shall constitute one document.

Except as herein amended, the terms and conditions of the Lease shall remain in full force and effect. Each person signing as Landlord or Tenant warrants and represents that she or he is authorized to execute and deliver this Eighth Amendment to Lease and to make it a binding obligation of Landlord or Tenant.

IN WITNESS WHEREOF, the parties hereto have caused this Eighth Amendment to Lease to be executed as a sealed instrument this the day first above written.

LANDLORD:

SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP,
a North Carolina limited partnership

BY: SOUTHPORT BUSINESS PARK INVESTORS
CORPORATION, General Partner

By: */s/ Robert S. Earrington, Jr.*
Robert S. Earrington, Jr.
Vice President

TENANT:

GENTRIS CORPORATION,
a Delaware corporation

By: */s/ Dawn L. Bordeaux*
Dawn L. Bordeaux
Vice President

EXHIBIT A – Demised Premises

[Intentionally omitted]

EXHIBIT B-1 – Existing Improvements

[Intentionally omitted]

EXHIBIT B-2 – Improvements

[Intentionally omitted]

Exhibit 10.56

NINTH AMENDMENT TO LEASE

THIS NINTH AMENDMENT TO LEASE (the "Ninth Amendment to Lease"), made as of the 7th day of November, 2012, by and between **SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP**, a North Carolina limited partnership (the "Landlord"), and **GENTRIS CORPORATION**, a Delaware corporation (the "Tenant").

WITNESSETH

WHEREAS, Landlord and Tenant entered into a certain lease dated as of June 12, 2004, amended by letter agreement dated October 21, 2004, by Second Amendment to Lease dated June 17, 2005, by Letter Agreement dated September 19, 2005, by Third Amendment to Lease dated May 25, 2006, by Fourth Amendment to Lease dated December 20, 2007, by Fifth Amendment to Lease dated June 15, 2009, by Sixth Amendment to Lease dated June 3, 2010, by Seventh Amendment to Lease dated October 26, 2010, and by Eighth Amendment to Lease (the "Eighth Amendment") dated July 29, 2011 (collectively, the "Lease"), for certain space known as Suite 400, in the Building located at 133 Southcenter Court, Morrisville, Wake County, North Carolina, as more particularly described in the Lease; and

WHEREAS, the Eighth Amendment provided for (i) a one-time right of first offer with regard to the Fourth Expansion Space (as defined in the Eighth Amendment) in favor of the Tenant that was set forth in Section 11 of the Eighth Amendment (the "Right of First Offer"), and (ii) a right of first refusal in favor of the Tenant for the Fourth Expansion Space that was set forth in Section 12 of the Eighth Amendment (the "Right of Refusal").

WHEREAS, Landlord desires to lease the Fourth Expansion Space to another tenant for a term that will expire on December 15, 2015; and

WHEREAS, Tenant consents to the Landlord's lease of the Fourth Expansion Space to another tenant for a term that will expire on December 15, 2015.

NOW THEREFORE, in consideration of the premises contained herein, the sum of Ten Dollars ($10.00) and other good and valuable consideration, the mutual receipt and sufficiency of which is hereby acknowledged, the parties agree to amend the Lease as follows:

1. Tenant hereby consents to the Landlord's lease of the Fourth Expansion Space to another tenant for a term that will expire on December 15, 2015.

2. Landlord and Tenant agree that the Tenant's Right of First Offer and the Tenant's Right of Refusal as set forth in the Eighth Amendment shall remain in full force and effect as set forth in the Eighth Amendment, but subordinate to the right of the Landlord to lease the Fourth Expansion Space to another tenant for a term that will expire on December 15, 2015.

3. Capitalized terms used but not defined herein shall have the meaning given to such terms in the Lease, as amended.

4. Except as herein amended, the terms and conditions of the Lease shall remain in full force and effect.

5. This Ninth Amendment to Lease may be executed in one or more counterparts, each of which shall constitute an original, but which together shall constitute one document.

Except as herein amended, the terms and conditions of the Lease shall remain in full force and effect. Each person signing as Landlord or Tenant warrants and represents that she or he is authorized to execute and deliver this Ninth Amendment to Lease and to make it a binding obligation of Landlord or Tenant.

[THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the parties hereto have caused this Ninth Amendment to Lease to be executed as a sealed instrument this the day first above written.

LANDLORD:

SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP, a North Carolina limited partnership

By: SOUTHPORT BUSINESS PARK INVESTORS CORPORATION, a North Carolina corporation, its general partner

By: */s/ Richard G. Sullivan*
Richard G. Sullivan
Vice President

TENANT:

GENTRIS CORPORATION, a Delaware corporation

By: */s/ Rick Williams*
Rick Williams
Chief Executive Officer

Exhibit 10.57

TENTH AMENDMENT TO LEASE ASSIGNMENT, ASSUMPTION, AND CONSENT TO ASSIGNMENT

THIS TENTH AMENDMENT TO LEASE, ASSIGNMENT, ASSUMPTION, AND CONSENT TO ASSIGNMENT (the "Tenth Amendment to Lease"), made as of the 15th day of July, 2014, by and between **SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP**, a North Carolina limited partnership (the "Landlord"), and **GENTRIS CORPORATION**, a Delaware corporation (the "Assignor") and **GENTRIS, LLC**, a Delaware limited liability company (the "Assignee").

WITNESSETH

A. WHEREAS, Landlord and Assignor, as Tenant, entered into a certain Lease Agreement dated as of June 12, 2004, amended by letter agreement dated October 21, 2004, by Second Amendment to Lease dated June 17, 2005, by Letter Agreement dated September 19, 2005, by Third Amendment to Lease dated May 25, 2006, by Fourth Amendment to Lease dated December 20, 2007, by Fifth Amendment to Lease dated June 15, 2009, by Sixth Amendment to Lease dated June 3, 2010, by Seventh Amendment to Lease dated October 26, 2010, by Eighth Amendment to Lease (the "Eighth Amendment") dated July 29, 2011 and the Ninth Amendment to Lease dated November 7, 2012 (collectively, the "Lease"), a copy of which is attached as Exhibit A, for certain space known as Suite 400, in the Building located at 133 Southcenter Court, Morrisville, Wake County, North Carolina, as more particularly described in the Lease; and

B. Pursuant to and in connection with a certain transaction involving Assignor and Assignee (the "Transaction"), all of Assignor's right, title and interest in and to the Lease is being acquired by and assigned to Assignee as of the effective date of the Transaction (the "Transaction Effective Date"), which is anticipated to occur on or before July 15, 2014.

C. In connection with the Transaction, the Lease requires the Landlord to consent to such assignment.

D. The Landlord and Assignee in conjunction with this Transaction wish to extend the term of the Lease, and set forth the Monthly Minimum Rent for the extended term along with amending certain other terms of the Lease;

NOW THEREFORE, in consideration of the premises contained herein, the sum of Ten Dollars ($10.00) and other good and valuable consideration, the mutual receipt and sufficiency of which is hereby acknowledged, the parties agree to amend the Lease as follows:

1. Assignment, Assumption, and Consent: As of the Transaction Effective Date, Assignor hereby assigns and transfers unto Assignee all of Assignor's rights, title and interest as Tenant in and to the Lease. Assignee hereby accepts this Assignment and agrees to assume and be bound by and to perform all of the duties and obligations as Tenant under the Lease, and shall be liable to Landlord for the performance thereof. After the Transaction Effective Date, all references in the Lease to Tenant shall mean the Assignee. Assignor shall not be released from any obligations or duties under the Lease and shall remain fully liable thereon notwithstanding this Assignment. As part of the assignment, Assignor will assign its current Security Deposit with a balance of $22,726.73 to Assignee and any future refund of the Security Deposit, if any, shall be made exclusively to Assignee. The Landlord hereby consents to the assignment and assumption of this Lease. Assignor and Assignee agree and acknowledge that the Demised Premises shall be used for the use as defined in the Lease, and for no other purpose whatsoever without the written consent of Landlord.

2. Notices: Assignor's address for purposes of notice and for all other purposes under the Lease shall be:

c/o Hughes Pittman & Gupton, LLP
1500 Sunday Drive, Suite 300
Raleigh, NC 27607 Telephone: 919-232-5900
Facsimile: 919-232-5901
Attention: Tim C. Gupton

Assignee's address for purposes of notice and for all other purposes under the Lease shall be:

c/o Cancer Genetics, Inc.
Meadows Office Complex
201 Route 17 North, 2nd Floor
Rutherford, NJ 07070
Telephone: 201-529-9200
Facsimile: 201-528-9201
Attention: Panna Sharma, President

3. Conditions Precedent. Notwithstanding anything to the contrary, this Tenth Amendment to Lease shall become effective only upon receipt by Landlord of written notice of the consummation of the Transaction from Assignor, and if such notice is not received by Landlord on or before October 1, 2014, this Tenth Amendment to Lease shall be null and void.

4. In connection with the extension of the Lease term and setting forth of Monthly Minimum Rents, Landlord and Tenant agree to the following:

a. Page Two - Section 1.02 - Term of the Lease. Delete "May 31, 2019" and insert "May 31, 2020" in its place.

b. Page Three - Section 1.04 - Monthly Minimum Rent and Adjusted Monthly Minimum Rent. At the end of the rent table that states:

Date Range	Rentable Square Feet	Minimum Annual Rent	Monthly Minimum Rent	Per Rentable Square Foot
06/01/2018 Through 05/31/2019	24,906	$ 316,272.40	$ 26,356.03	$ 12.70

Insert the following:

Date Range	Rentable Square Feet	Minimum Annual Rent	Monthly Minimum Rent	Per Rentable Square Foot
06/01/2019 Through 05/31/2020	24,906	$ 324,179.21	$ 27,014.93	$ 13.07

c. Page Four - Section 1.06 - Rent Abatement. Add the following at the end of Section 1.06:

Notwithstanding the rent chart set forth in Section 2 of the Eight Amendment to Lease, Twelve Thousand Dollars ($12,000.00) monthly of the Monthly Minimum Rent due for each of the months from July, 2014 through December, 2014 shall be abated (the "Tenth Amendment Abatement Months"). During the Tenth Amendment Abatement Months, Tenant shall continue to pay the balance of Eleven Thousand Eight Hundred Seventy-seven and 27/100 Dollars ($11,877.27) monthly of the Monthly Minimum Rent along with all Direct Expenses due under the Lease. The entire Monthly Minimum Rent that was abated for the Tenth Amendment Abatement Months, along with any previous Rent Abatement afforded by the Lease shall immediately become due and payable upon the occurrence of an Event of Default past all applicable cure periods, by Tenant under the Lease.

d. Termination of all Rights of First Offer, Rights of First Refusal, and Expansion Rights: All rights contained in the Lease and its amendments that give Tenant any rights to spaces in the Property other than the Demised Premises are hereby terminated. This includes, but is not limited to the following:

(i) Sixth Amendment to Lease - Section 8 - Contingent Space. This section is deleted in its entirety.

(ii) Eighth Amendment to Lease - Section 11 - Right of First Offer. This section is deleted in its entirety.

(iii) Eight Amendment to Lease - Section 12 - Right of First Refusal. This section is deleted in its entirety.

(iv) Ninth Amendment to Lease - Section 2. This section is deleted in its entirety.

e. At Landlord's request with ninety (90) days prior written notice from Landlord, Tenant agrees to relinquish any or all of that part of the Demised Premises identified as the Third Expansion Space on the Eighth Amendment to Lease (that being the Four Thousand Three Hundred Fifty (4,350) rentable square feet) as shown on Exhibit A of the Eighth Amendment to Lease (the "Relinquished Portion"). The Monthly Minimum Rent will be reduced based on the size of the Relinquished Portion on a per square foot basis effective as of the date that Landlord takes possession of the Relinquished Portion. In addition, the Direct Expenses will be reduced to reflect the decreased square footage of the Demised Premises and its pro-rata share. Landlord will pay for the costs of separating the Relinquished Portion from the Demised Premises.

5. Assignor and Assignee warrant there have been no dealings with any broker other than Aldene E. "Dee" Creech Osborne of NAI Carolantic Realty, Inc. in connection with this Tenth Amendment to Lease.

6. This Tenth Amendment to Lease may be executed in counterparts, each of which when so executed shall be deemed to be an original and such counterparts shall together be constitute and be one and the same instrument. Counterpart signatures need not be on the same page and shall be deemed effective upon receipt.

7. Except as herein amended, the terms and conditions of the Lease shall remain in full force and effect. Each person signing as Landlord, Assignor or Assignee warrants and represents that she or he is authorized to execute and deliver this Tenth Amendment to Lease and to make it a binding obligation of Landlord, Assignor or Assignee. Capitalized terms not otherwise defined in this Tenth Amendment to Lease shall have the meaning set forth in the Lease.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed the date and year first above written.

LANDLORD:

SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP, a North Carolina limited partnership

By: SOUTHPORT BUSINESS PARK INVESTORS CORPORATION, a North Carolina corporation,
its general partner

By: _____
Richard G. Sullivan
Vice President

ASSIGNOR:

GENTRIS CORPORATION,
a Delaware corporation

By: _____
Name:
Title:

ASSIGNEE:

GENTRIS LLC,
a Delaware limited liability company

By: _____
Name:
Title:

EXHIBIT A - Lease

[Intentionally omitted]

Exhibit 10.58

STATE OF NORTH CAROLINA

ASSIGNMENT OF LEASE

COUNTY OF WAKE

THIS ASSIGNMENT OF LEASE ("Assignment") is entered into and effective this **15th** day of July, 2019· ("Effective Date") by and between **Cancer Genetics, Inc.,** a Delaware corporation, successor-in-interest to Gentris, LLC, a Delaware limited liability company, (hereinafter the "Assignor") and **Interpace BioPharma, Inc.,** a Delaware corporation (hereinafter the "Assignee"), with the consent of **Southport Business Park Limited Partnership,** a North Carolina limited partnership (hereinafter the "Landlord").

W I T N E S S E T H:

WHEREAS, Assignor, successor-in-interest to Gentris, LLC, successor-in-interest to Gentris Corporation, who as tenant, previously entered into a certain lease agreement dated as of June 12, 2004, as amended by letter agreement dated October 21, 2004, by Second Amendment to Lease dated June 17, 2005, by Letter Agreement dated September 19, 2005, by Third Amendment to Lease dated May 25, 2006, by Fourth Amendment to Lease dated December 20, 2007, by Fifth Amendment to Lease dated June 15, 2009, by Sixth Amendment to Lease dated June 3, 2010, by Seventh Amendment to Lease dated October 26, 2010, by Eighth Amendment to Lease dated July 29, 2011, by Ninth Amendment to Lease dated November 7, 2012 and by Tenth Amendment to Lease dated July 15, 2014 (collectively, the "Lease") with Landlord for certain premises located at 133 Southcenter Court, Suite 400, Morrisville, North Carolina 27650 ("Premises"); and

WHEREAS, as of the Effective Date, Assignor owes Landlord the amount of $79,323.70 ("Outstanding Balance") pursuant to the terms of the Lease.

WHEREAS, Assignor is desirous of assigning all of its rights and responsibilities under the Lease to the Assignee consistent with the terms and conditions set forth herein; and

WHEREAS, Assignee desires to assume all of Assignor's obligation under the Lease consistent with the terms and conditions set forth herein;

WHEREAS, Assignor and Assignee desire to obtain Landlord's consent in connection therewith; and

NOW, THEREFORE, for good and valuable consideration, the receipt and adequacy of which is hereby acknowledged and agreed, the parties hereto agree as follows:

1. Assignment. For good and valuable consideration, the receipt and adequacy of which are hereby acknowledged by Assignor, as of the Effective Date, Assignor hereby assigns and transfers unto Assignee all of Assignor's rights, title and interest as Tenant in and to the Lease. As a material inducement for Assignee to execute this Assignment, Assignor represents and warrants to Assignee that Assignor has not previously assigned or encumbered all or any portion of Assignor's right, title and interest arising under the Lease and that upon receipt of the Outstanding Balance and the Administrative Fee (as defined in Section 19 below) by Landlord, Assignor will not be in default in the performance of any of Assignor's obligations under the Lease.

2. Assumption. Assignee hereby accepts this Assignment and agrees to assume and be bound by and to perform all duties and obligations as Tenant under the Lease, and shall be liable to Landlord for the performance thereof. Assignee hereby acknowledges receipt of a fully executed copy of the Lease from Assignor.

3. Consent to Assignment and Waiver of Termination Rights. Landlord hereby: (i) acknowledges and consents, for purposes of Section 13.01 of the Lease, to the assignment of this Lease by Assignor to Assignee pursuant to the terms of this Assignment, and waives any applicable termination or other rights under the Lease arising solely in connection with this Assignment, (ii) asserts that, to the best of Landlord's knowledge, the Lease is in full force and effect and (iii) acknowledges that, upon receipt by Landlord of the full Outstanding Balance and the Administrative Fee, there is no default of Assignor under the Lease which has remained uncured after any applicable period for notice and cure and no circumstance or set of circumstances exists (including this Assignment) which, with the giving of notice or the passage of time, or both, would constitute a default under the Lease.

4. No Modification of Use. Assignor and Assignee agree and acknowledge that the Premises shall be used for the use as defined in the Lease, and for no other purpose whatsoever without the written consent of Landlord.

5. No Default. Neither Assignor nor any guarantor of the Original Lease shall be released from any obligations or duties under the Lease and shall remain fully liable thereon notwithstanding this Assignment.

6. Entire Agreement. This Assignment contains the entire agreement of Assignor and Assignee with respect to the subject matter hereof.

7. Notices. All notices to Assignee as Tenant under the Lease shall be delivered to:

Interpace BioPharma, Inc.
c/o Morris Corporate Center 1, Building C
300 Interpace Parkway
Parsippany, New Jersey 07054
Attention: Jack E. Stover, President & CEO
Telephone: 412-224-6100

Email: jstover@interpacedx.com

All notices to the Assignor shall be delivered to:

Cancer Genetics, Inc.
201 Route 17 North, 2nd Floor
Rutherford, New Jersey 07070
Attention: Jay Roberts, President & CEO
Telephone: 201-528-9200
Facsimile: 201-528-920

Email: Jay.Roberts@CGI.com

8. Security Deposit. As part of the assignment, Assignor will assign its current security deposit balance with Landlord in the amount of **$22,726.73** to Assignee and upon the effectiveness of this agreement any future refund of the deposit, if any, shall be made exclusively to Assignee. In addition, simultaneously upon the execution of this Assignment, Assignee shall deposit the additional sum of **$11,190.77** as additional security deposit with Landlord so that as of the Effective Date, the security deposit on hand shall be **$33,917.50.**

9. No Other Amendment. Except as set forth herein, the Lease shall remain in full force and effect, and shall be binding and enforceable against Assignor and Assignee and Landlord. Except as otherwise set forth herein, capitalized terms shall have the meanings attributed to them in the Lease.

10. Guaranty of Lease. Simultaneously upon the execution of this Assignment, Assignee shall cause Interpace Diagnostics Group, Inc., a Delaware corporation, to sign a guaranty of lease in the same form as that guaranty of lease attached hereto as Exhibit A.

11. Counterparts. This Assignment may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same agreement.

12. Binding Effect. This Assignment shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.

13. Governing Law. This Assignment shall be construed and interpreted under, and governed and enforced according to, the laws of the State of North Carolina. The parties hereto hereby submit to the jurisdiction of the courts of the State of North Carolina in the event of any action or dispute arising hereunder.

14. Headings and Construction. The headings set forth in this Assignment are inserted only for convenience and are not in any way to be construed as part of this Assignment or a limitation on the scope of the particular section to which it refers.

15. Authority. Landlord, Assignor, Assignee and Guarantor warrant and represent that the individual executing this Assignment on behalf of such entity is authorized to execute and deliver this Assignment and to make it a binding obligation of Landlord, Assignor, Assignee and Guarantor. This Assignment shall be binding upon the respective parties hereto, and upon their heirs, executors, successors and assigns.

16. No Options or Inducements: Condition of Premises. Assignee acknowledges and agrees that, as of the Effective Date and notwithstanding anything to the contrary set forth in the Lease or this Assignment, Assignee shall have no extension, renewal, termination or other options whatsoever with regard to the Premises or under the Lease. Assignee further acknowledges and agrees that Assignee is not and shall not be entitled to any allowances, concessions, upfit work or other inducements of any kind in connection with the Premises or under the Lease. In the latter regard, Assignee acknowledges and agrees that from and after the Effective Date, Landlord is leasing the Premises to Assignee "as is," without any representations or warranties of any kind (including, without limitation, any express or implied warranties of merchantability, fitness or habitability) and without any obligation on the part of Landlord to alter, remodel, improve or decorate the Premises or any part thereof.

17. Acknowledgment of Non-Existence of Claims and Waiver. Assignor and Assignee acknowledges that as of the Effective Date, there are no claims by Assignor or Assignee against Landlord arising under the Lease. Assignor and Assignee release and discharge Landlord, and its successors and assigns, from any demands for injuries or damages of any kind or nature arising out of or related to the Lease or the Premises that occurred on or prior to the Effective Date.

18. Brokerage. Assignor and Assignee represent to Landlord that neither Assignor nor Assignee have entered into any agreements with any brokers in connection with this Assignment. Assignor and Assignee indemnify, hold harmless and agree to defend Landlord, its members, principals, partners, officers, directors, employees and agents and the respective principals, officers and directors of any such agents from and against any and all claims of any brokers claiming to have represented Assignor or Assignee in connection with this Assignment.

19, Administrative Fee. On or prior to the Effective Date, Assignor shall pay the sum of $1,500.00 to Landlord to compensate Landlord for legal fees, cost of administration, and other expenses incurred in connection with the negotiation and processing of this Assignment ("Administrative Fee"). To the extent Assignor fails to compensate Landlord for such Administrative Fee, Assignee shall be responsible for such fee within five (5) days of an invoice from Landlord.

20. Counterparts. This Agreement may be executed in any number of counterparts with the same effect as if all signing parties had signed the same document. All counterparts shall be construed together and constitute the same instrument. Such counterparts may be transmitted electronically and any such electronically transmitted counterparts shall be deemed to be an original executed counterpart.

[SIGNATURE PAGE TO FOLLOW]

IN WITNESS WHEREOF, the parties have set their hands as of the day and year first above written.

ASSIGNOR:

CANCER GENETICS, INC.,
a Delaware corporation

/s/ John A. Roberts
By: John A. Roberts
Its: President & CEO

ASSIGNEE:

INTERPACE BIOPHARMA, INC.,
a Delaware corporation

/s/ Jack E. Stover
By: Jack Stover
Its: President & Chief Executive Officer

Acknowledged and Agreed to by:

GENTRIS, LLC,
a Delaware limited liability company

/s/ John A. Roberts
By: John A. Roberts
Its: President & CEO

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

[*Signature Page to Assignment of NC Lease*]

ACKNOWLEDGEMENT AND CONSENT OF GUARANTOR

For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the guarantor of the Lease hereby acknowledges and consents to the terms of this Assignment and reaffirms its obligations under that certain Unconditional Guaranty of Lease effective July 15, 2014 in favor of Landlord.

GUARANTOR:

CANCER GENETICS, INC.,
a Delaware corporation

/s/ John A. Roberts

By: John A. Roberts
Its: President & CEO

ACKNOWLEDGEMENT AND CONSENT OF LANDLORD:

Landlord has acknowledges and consents to the above referenced Assignment as of the Effective Date.

LANDLORD:

Southport Business Park Limited Partnership,
a North Carolina limited partnership

By: **Southport Business Park Investors Corporation,** general partner

/s/ Richard G. Sullivan
Richard G. Sullivan, Vice President

EXHIBIT A

Guaranty of Lease

[Intentionally omitted.]

Exhibit 10.59

GUARANTY OF LEASE

This Guaranty of Lease ("Guaranty") is given as of July **15,** 2019 by **Interpace Diagnostics Group, Inc.,** a Delaware corporation ("Guarantor") in favor of **Southport Business Park Limited Partnership,** a North Carolina limited partnership ("Landlord").

RECITALS

A. Cancer Genetics, Inc., a Delaware corporation ("Assignor") successor-in-interest to Gentris, LLC, successor-in-interest to Gentris Corporation, who as tenant, previously entered into a certain lease agreement dated as of June 12, 2004, as amended by letter agreement dated October 21, 2004, by Second Amendment to Lease dated June 17, 2005, by Letter Agreement dated September 19, 2005, by Third Amendment to Lease dated May 25, 2006, by Fourth Amendment to Lease dated December 20, 2007, by Fifth Amendment to Lease dated June 15, 2009, by Sixth Amendment to Lease dated June 3, 2010, by Seventh Amendment to Lease dated October 26, 2010, by Eighth Amendment to Lease dated July 29, 2011, by Ninth Amendment to Lease dated November 7, 2012 and by Tenth Amendment to Lease dated July 15, 2014 (collectively, "Original Lease") relating to certain premises located at 133 Southcenter Court, Morrisville, North Carolina ("Premises").

B. Assignor has assigned Assignor's rights, title and interest as tenant in and to the Original Lease to **Interpace BioPharma, Inc.,** a Delaware corporation ("Tenant") pursuant to that certain Assignment of Lease dated July _, 2019 ("Assignment"). The Original Lease (as may be further amended or assigned) and the Assignment are collectively referred to as the "Lease."

NOW, THEREFORE, as a material inducement for Landlord to acknowledge and consent to the Assignment, Guarantor agrees as follows:

1. Guarantor hereby unconditionally and absolutely guarantees to Landlord the full, prompt and complete payment by Tenant of the rent and all other sums payable by Tenant under the Lease and the full, prompt and complete performance by Tenant of all and singular the terms, covenants, conditions and provisions in the Lease required to be performed by Tenant.

2. Guarantor hereby waives notice of acceptance hereof and any and all other notices which by law or under the terms and provisions of the Lease are required to be given to Tenant, and also waives any demand for or notice of the payment of rent and other sums payable by Tenant under the Lease and the performance of all and singular terms, covenants, conditions and provisions in the Lease required to be performed by Tenant; and Guarantor further expressly hereby waives any legal obligation, duty or necessity for Landlord to proceed first against Tenant or to exhaust any remedy Landlord may have against Tenant, it being agreed that in the event of default or failure of performance in any respect by Tenant under the Lease, Landlord may proceed and have right of action solely against Guarantor or Tenant or jointly against Guarantor and Tenant. Guarantor expressly waives any rights Guarantor may have under applicable law.

3. That any modification, amendment, change or extension of any of the terms, covenants or conditions of the Lease which Tenant and Landlord may hereafter make, or any forbearance, delay, neglect or failure on the part of Landlord in enforcing any of the terms, covenants conditions or provisions of the Lease shall not in any way affect, impair or discharge Guarantor's unconditional liability to Landlord hereunder, nor shall Guarantor's liability hereunder be impaired, affected or discharged by any act done or omitted to be done or by any waiver by either Landlord or Tenant, notwithstanding that Guarantor may not have consented thereto or may not have notice or knowledge hereof.

4. That this Guaranty shall continue during the entire term of the Lease and any renewals or extensions thereof and until Tenant has fully discharged all Tenant's obligations thereunder, and that this Guaranty shall not be diminished by any payment of rent or performance of the terms, covenants or conditions of the Lease by Landlord, by Tenant or by Guarantor, or by any assignment of Tenant's interest in the Lease, or any subletting thereof until each and all of Tenant's obligations under the Lease have been fully discharged.

5. Guarantor expressly agrees that Guarantor's obligations hereunder shall in no way be terminated, affected or impaired by reason of the granting by Landlord of any indulgences to Tenant or by reason of the assertion against Tenant of any of the rights or remedies reserved to Landlord pursuant to the provisions of the Lease or by the relief of Tenant from any of Tenant's obligations under the Lease by operation of law or otherwise, the undersigned hereby waiving all suretyship defenses. The terms of this Guaranty shall not be impaired modified, changed, released or limited in any manner whatsoever by any impairment, modification, change, release or limitation of the liability of Tenant or Tenant's estate in bankruptcy resulting from the operation of any present or future provision of the Federal Bankruptcy Act or other statute regarding reorganization or insolvency.

6. Guarantor agrees that Guarantor's liability hereunder shall be primary, and that in any right of action which shall accrue to Landlord under the Lease, Landlord, in addition to Landlord's rights and remedies stated above, may proceed against Guarantor without having commenced any action against or having obtained any judgment against Tenant. This is a guaranty of payment and performance and not of collection. Guarantor specifically waives the benefit of North Carolina General Statutes §26-7 et seq.

7. It is agreed that the failure of Landlord to insist in any one or more instances upon strict performance or observance of any of the terms, provisions or covenants of the Lease or to exercise any right therein contained shall not be construed or deemed to be a waiver or relinquishment for the future of such term, provision, covenant or right, but the same shall continue and remain in full force and effect. Receipt by Landlord of rent or other payments with acknowledgment of the breach of any provision of the Lease shall not be deemed a waiver of such breach.

8. No assignment or other transfer of the Lease, or any interest therein, shall operate to extinguish or diminish the liability of Guarantor, whether or not Guarantor shall have received any notice of or consented to such assignment or other transfer of the Lease or any interest therein.

9. Should any action at law or in equity be brought to enforce the provisions of this Guaranty or the rights of Landlord under the Lease or under this Guaranty, the non-prevailing party agrees to pay the costs and expenses off each such action, including the prevailing party's reasonable attorney's fees.

10. If at any time more than one person or entity shall be responsible in any capacity for the payment of rent and other charges and for the performance of the covenants and conditions of the Lease to be performed by Tenant, the obligations of Guarantor and all such other persons or entities shall be joint and several. This Guaranty or any of the provisions hereof cannot be modified, waived or terminated unless in writing signed by Landlord and Guarantor. All obligations and liabilities to Guarantor pursuant to this Guaranty shall be binding upon the heirs, legal representatives, successors and assigns of each Guarantor. This Guaranty shall be governed by and construed in accordance with the applicable laws of the State of North Carolina (excluding conflict-of-laws principles). Venue of any and all actions arising in connection with this Guaranty shall reside in Wake County, North Carolina.

(Signature page follows)

IN WITNESS WHEREOF, Guarantor has executed this Guaranty by hand and under seal as of the day and year first above written.

GUARANTOR:

Interpace Diagnostics Group, Inc.,
a Delaware corporation

By:	*/s/ Jack E. Stover* (SEAL)
Name:	Jack Stover
Title:	President & Chief Executive Officer
EIN:	[Intentionally omitted.]
Address:	c/o Morris Corporate Center 1, Building C 300 Interpace Parkway Parsippany, New Jersey 07054
Telephone:	412-224-6100
Email:	jstover@interpacedx.com

[Signature page to North Carolina Guaranty of Lease]

Exhibit 21.1

Interpace Biosciences, Inc.
Subsidiaries

Interpace Diagnostics, LLC, a Delaware limited liability company, is a wholly-owned subsidiary of Interpace Biosciences, Inc.
Interpace Diagnostics Corporation, a Delaware corporation, is a wholly-owned subsidiary of Interpace Diagnostics, LLC.
Interpace Diagnostics Lab Inc., a Delaware corporation, is a wholly-owned subsidiary of Interpace Diagnostics, LLC.
Interpace Pharma Solutions, Inc., a Delaware corporation, is a wholly-owned subsidiary of Interpace Biosciences, Inc.

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

Interpace Biosciences, Inc.
Parsippany, New Jersey

We hereby consent to the incorporation by reference in the Registration Statements on Form S-1 (Nos. 333-218140 and 333-218780), Form S-3 (Nos. 333-207263 and 333-227728) and Form S-8 (Nos. 333-61231, 333-60512, 333-177969, 333-201070, 333-214260, and 333-234284) of Interpace Biosciences Inc. of our report dated April 22, 2020, relating to the consolidated financial statements and financial statement schedule, which appears in this Form 10-K.

Woodbridge, New Jersey
April 22, 2020

Exhibit 31.1

CERTIFICATION PURSUANT TO SECTION 302
OF THE SARBANES-OXLEY ACT OF 2002

I, Jack E. Stover, certify that:

1. I have reviewed this Annual Report on Form 10-K for the year ended December 31, 2019 of Interpace Biosciences, 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 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: April 22, 2020

/s/ Jack E. Stover
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION PURSUANT TO SECTION 302
OF THE SARBANES-OXLEY ACT OF 2002

I, Fred Knechtel, certify that:

1. I have reviewed this Annual Report on Form 10-K for the year ended December 31, 2019 of Interpace Biosciences, 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 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: April 22, 2020

/s/ Fred Knechtel
Chief Financial Officer
(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 Interpace Biosciences, Inc. (the "Company") on form 10-K for the fiscal year ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Jack E. Stover, as Chief Executive Officer 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, to the best of my knowledge, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) 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: April 22, 2020

/s/ Jack E. Stover
Chief Executive Officer
(Principal Executive Officer)

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

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 Interpace Biosciences, Inc. (the "Company") on form 10-K for the fiscal year ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Fred Knechtel, as Chief Financial Officer 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, to the best of my knowledge, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) 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: April 22, 2020

/s/ Fred Knechtel
Chief Financial Officer
(Principal Financial Officer)

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.