

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

**Form 10-K**

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

For the fiscal year ended December 31, 2019

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

For the transition period from \_\_\_\_\_ to \_\_\_\_\_  
Commission File No. 001-36847



**Invitae Corporation**

(Exact name of the registrant as specified in its charter)

Delaware  
(State or other jurisdiction of  
incorporation or organization)

27-1701898  
(I.R.S. Employer  
Identification No.)

1400 16th Street, San Francisco, California 94103  
(Address of principal executive offices, Zip Code)

(415) 374-7782

(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol	Name of exchange on which registered
Common Stock, \$0.0001 par value per share	NVTA	New York Stock Exchange

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

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

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  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 and post such files). Yes  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  Smaller reporting company  Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 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

As of June 28, 2019, the aggregate market value of common stock held by non-affiliates of the Registrant was approximately \$2.1 billion, based on the closing price of the common stock as reported on The New York Stock Exchange for that date.

The number of shares of the registrant's Common Stock outstanding as of February 24, 2020 was 98,961,385.

**DOCUMENTS INCORPORATED BY REFERENCE**

Items 10 (as to directors and Section 16(a) Beneficial Ownership Reporting Compliance), 11, 12, 13 and 14 of Part III incorporate by reference information from the registrant's proxy statement to be filed with the Securities and Exchange Commission in connection with the solicitation of proxies for the registrant's 2020 Annual Meeting of Stockholders.

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## PART I

### ITEM 1. Business.

This report contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. All statements in this report other than statements of historical fact, including statements identified by words such as “believe,” “may,” “will,” “estimate,” “continue,” “anticipate,” “intend,” “expect” and similar expressions, are forward-looking statements. Forward-looking statements include, but are not limited to, statements about:

- our views regarding the future of genetic testing and its role in mainstream medical practice;
- our mission and strategy for our business, products and technology, including our ability to expand our content and develop new content while maintaining attractive pricing, further enhance our genetic testing service and the related user experience, build interest in and demand for our tests and attract potential partners;
- the implementation of our business model;
- the expected benefits from and our ability to integrate our acquisitions;
- the rate and degree of market acceptance of our tests and genetic testing generally;
- our ability to scale our infrastructure and operations in a cost-effective manner;
- the timing of and our ability to introduce improvements to our genetic testing platform and to expand our assays to include additional genes;
- our expectations with respect to future hiring;
- the timing and results of studies with respect to our tests;
- developments and projections relating to our competitors and our industry;
- our competitive strengths;
- the degree to which individuals will share genetic information generally, as well as share any related potential economic opportunities with us;
- our commercial plans, including our sales and marketing expectations;
- our ability to obtain and maintain adequate reimbursement for our tests;
- regulatory developments in the United States and foreign countries;
- our ability to attract and retain key scientific or management personnel;
- our expectations regarding our ability to obtain and maintain intellectual property protection and not infringe on the rights of others;
- our ability to obtain funding for our operations and the growth of our business, including potential acquisitions;
- our financial performance;
- the impact of accounting pronouncements and our critical accounting policies, judgments, estimates and assumptions on our financial results;
- our expectations regarding our future revenue, cost of revenue, operating expenses and capital expenditures, and our future capital requirements; and
- the impact of tax laws on our business.

Forward-looking statements are subject to a number of risks and uncertainties that could cause actual results to differ materially from those expected. These risks and uncertainties include, but are not limited to, those risks discussed in Item 1A of this report. Although we believe that the expectations and assumptions reflected in the forward-looking statements are reasonable, we cannot guarantee future results, level of activity, performance or achievements. In addition, neither we nor any other person assumes responsibility for the accuracy and completeness of any of these forward-looking statements. Any forward-looking statements in this report speak only as of the date of this report. We expressly disclaim any obligation or undertaking to update any forward-looking statements.

This report contains statistical data and estimates that we obtained from industry publications and reports. These publications typically indicate that they have obtained their information from sources they believe to be reliable, but do not guarantee the accuracy and completeness of their information. Some data contained in this report is also based on our internal estimates. Although we have not independently verified the third-party data, we believe it to be reasonable.

In this report, all references to “Invitae,” “we,” “us,” “our,” or “the Company” mean Invitae Corporation.

Invitae and the Invitae logo are trademarks of Invitae Corporation. We also refer to trademarks of other companies and organizations in this report.

## Overview

Combining genetic testing services that support patient care throughout life’s journey – from inherited disease diagnosis, to family planning, to proactive health screening – with a unique, rapidly expanding network of patients, healthcare providers, biopharma and advocacy partners, Invitae is capturing the broad potential of genetics and helping to expand its use across the healthcare continuum. Through the custom design and application of automation, robotics and bioinformatics software solutions tailored to the complexity of sample processing and complex variant interpretation, Invitae can apply its world-class clinical expertise to medical interpretation at scale, simplifying the process of obtaining and utilizing affordable, high-quality genetic information to inform critical healthcare decisions while making genetic testing available for billions of people.

By pioneering new ways of sharing and understanding genetic information, Invitae is transforming the field of genetics from one-dimensional testing to complex information management.

## Mission and strategy

Invitae’s mission is to bring comprehensive genetic information into mainstream medical practice to improve the quality of healthcare for billions of people. Our goal is to aggregate a majority of the world’s genetic information into a comprehensive network that enables sharing of data among network participants to improve healthcare and clinical outcomes.

We were founded on four core principles:

- Patients should own and control their own genetic information;
- Healthcare professionals are fundamental in ordering and interpreting genetic information;
- Driving down the price of genetic information will increase its clinical and personal utility; and
- Genetic information is more valuable when shared.

Our strategy for long-term growth centers on five key drivers of our business, which we believe work in conjunction to create a flywheel effect extending our leadership position in the new market we are building:



- **Expanding our content offering.** We intend to continue steadily adding additional content to the Invitae platform, ultimately leading to affordable access to the personal molecular information relevant in enabling personalized medicine. The breadth and depth of our offering is a core and central contribution to an improved user experience.
- **Creating a unique user experience.** A state-of-the-art interactive platform will enhance our service offering, leverage the uniquely empowering characteristics of online sharing of genetic information and, we believe, enable a superior economic offering to clients. We intend to continue to expend

substantial efforts developing, acquiring and implementing technology-driven improvements to our customers' experience. We believe that an enhanced user experience and the resulting benefits to our brand and reputation will help draw customers to us over and above our direct efforts to do so.

- **Driving volume.** We intend to increase our brand equity and visibility through excellent service and a variety of marketing and promotional techniques, including scientific publications and presentations, sales, marketing, public relations, social media and web technology vehicles. We believe that rapidly increasing the volume of customers using our platform helps us to attract partners.
- **Attracting partners.** As we add more customers to our platform, we believe our business becomes particularly attractive to potential partners that can help the patients in our network further benefit from their genetic information or that provide us access to new customers who may wish to join our network. We believe the cumulative effect of the increased volume brought by these strategic components will allow us to lower the cost of our service.
- **Lowering the cost and price of genetic information.** Our goal is to provide customers with a broad menu of genetic content at a reasonable price and rapid turn-around time in order to grow volume and further achieve economies of scale. As we do so and benefit from further cost savings, we expect that those cost savings will allow us to deliver still more comprehensive information at decreasing prices and further improve the customer experience, allowing us to reap the cumulative benefits from all of the efforts outlined above.

We seek to differentiate our service in the market by establishing an exceptional experience for our customers. To that end, we believe that elevating the needs of the customer over those of our other stakeholders is essential to our success. Thus, in our decision-making processes, we will strive to prioritize, in order:

- The needs of our customers;
- Motivating our employees to serve our customers; and
- Our long-term stockholder value.

We are certain that focusing on customers as our top priority rather than short-term financial goals is the best way to build and operate an organization for maximum long-term value creation.

### ***Business overview***

We are focused on making comprehensive, high-quality genetic information more accessible by lowering the cost of genetic testing, by creating a network of partners to increase the utility of genetic information across the healthcare continuum, and ultimately by managing that information on behalf of our customers.

As our market share grows, we expect that our business will grow in three stages:

- 1) **Genetic testing:** making genetic testing more affordable and more accessible with fast turnaround time. We believe that there is a significant market opportunity for high-volume, low-cost genetic testing that allows us to serve a large number of customers. We launched our first commercial offering in November 2013 with an offering of approximately 200 genes, growing the test menu over time to include more than 20,000 genes to help diagnose disease, inform family planning, and serve healthy individuals. In 2019, we accessioned approximately 482,000 samples and generated revenue of \$216.8 million reflecting an approximate 59% and 47% increase over 2018 volume and revenue, respectively. In 2019, we achieved gross profit of \$98.7 million, compared to \$67.6 million in 2018. In support of our efforts to reduce the cost per test, expand our test menu, and develop a scalable laboratory infrastructure, we incurred research and development expenses of \$141.5 million, \$63.5 million and \$46.5 million in 2019, 2018, and 2017, respectively, and selling and marketing expenses of \$122.2 million, \$74.4 million, and \$53.4 million in 2019, 2018, and 2017, respectively.
- 2) **Genome network:** sharing genetic information on a global scale to advance science and medicine. We are focusing our efforts on partnering with patients, family members, healthcare professionals, payers, industry professionals, researchers, and clinical trial sponsors to advance the development of our genome network. Our goal is to build a network through which individuals can access, aggregate, and customize information based on their genotype and phenotype and participate in new research, clinical trials, treatment planning, or other related purposes that may benefit the individual and/or their clinician. Individuals can also decide to share information if they feel it will benefit them or will contribute more broadly to furthering knowledge about their conditions.

In addition to investing in informatics solutions and infrastructure to support network development, we have been expanding our partnerships with biopharmaceutical companies, including Alnylam Pharmaceuticals, Inc., Biogen Inc., BioMarin Pharmaceutical Inc., Horizon Pharma USA, Inc., MyoKardia, Inc., Spark Therapeutics, Inc., and others to support accelerating patient diagnosis, clinical trial recruitment and other research-related initiatives. Our biopharmaceutical industry partnerships are complemented by partnerships with leading health systems, executive health programs and leading research institutions, including the Geisinger Health System, the Mayo Clinic, Memorial Sloan Kettering Cancer Center, MedCan, and Stanford Health Care, among others.

- 3) **Genome management:** building a secure and trusted genome management infrastructure. By generating and storing large amounts of individualized genetic information for every patient sample, we believe we can create value over the course of disease or lifetime of a customer.

### **Competition**

Our competitors include companies that offer molecular genetic testing services, including specialty and reference laboratories that offer traditional single and multi-gene tests. Principal competitors include companies such as Ambry Genetics, a subsidiary of Konica Minolta Inc.; Athena Diagnostics and Blueprint Genetics, subsidiaries of Quest Diagnostics Incorporated; Baylor-Miraca Genetics Laboratories; Centogene AG; Color Genomics, Inc.; Connective Tissue Gene Test LLC, a subsidiary of Health Network Laboratories, L.P.; Cooper Surgical, Inc.; Emory Genetics Laboratory, a subsidiary of Eurofins Scientific; GeneDx, a subsidiary of OPKO Health, Inc.; Integrated Genetics, Sequenom Inc., Correlagen, and MNG Laboratories, subsidiaries of Laboratory Corporation of America Holdings; Myriad Genetics, Inc.; Natera, Inc.; Perkin Elmer, Inc.; PreventionGenetics, LLC; Progenity, Inc.; and Sema4 Genomics; as well as other commercial and academic labs. In addition, there are a large number of new entrants into the market for genetic information ranging from informatics and analysis pipeline developers to focused, integrated providers of genetic tools and services for health and wellness, including Illumina, Inc. which is also one of our suppliers. In addition to the companies that currently offer traditional genetic testing services and research centers, other established and emerging healthcare, information technology and service companies may commercialize competitive products including informatics, analysis, integrated genetic tools and services for health and wellness.

We believe the principal competitive factors in our market are:

- breadth and depth of content;
- quality;
- reliability;
- accessibility of results;
- turnaround time of testing results;
- price and quality of tests;
- coverage and reimbursement arrangements with third-party payers;
- convenience of testing;
- brand recognition of test provider;
- additional value-added services and informatics tools;
- client service; and
- quality of website content.

We believe that we compare favorably with our competitors on the basis of these factors. However, many of our competitors and potential competitors have longer operating histories, larger customer bases, greater brand recognition and market penetration, substantially greater financial, technological and research and development resources and selling and marketing capabilities, and more experience dealing with third-party payers. As a result, they may be able to respond more quickly to changes in customer requirements, devote greater resources to the development, promotion and sale of their tests, or sell their tests at prices designed to win significant levels of market share. We may not be able to compete effectively against these organizations.

## Regulation

### *Reimbursement*

In April 2014, Congress passed the Protecting Access to Medicare Act of 2014, or PAMA, which included substantial changes to the way in which clinical laboratory services are paid under Medicare. Under PAMA (as amended by the Further Consolidated Appropriations Act, 2020) and its implementing regulations, laboratories that realize at least \$12,500 in Medicare Clinical Laboratory Fee Schedule, or CLFS, revenues during the six month reporting period and that receive the majority of their Medicare revenue from payments made under the CLFS or the Physician Fee Schedule must report, beginning in 2017, and then in 2021 and every three years thereafter (or annually for “advanced diagnostic laboratory tests”), private payer payment rates and volumes for their tests. We do not believe that our tests meet the current definition of advanced diagnostic laboratory tests, and therefore believe we are required to report private payer rates for our tests on an every three years basis starting next in 2021. CMS uses the rates and volumes reported by laboratories to develop Medicare payment rates for the tests equal to the volume-weighted median of the private payer payment rates for the tests. Laboratories that fail to report the required payment information may be subject to substantial civil money penalties.

As set forth under the regulations implementing PAMA, for tests furnished on or after January 1, 2018, Medicare payments for clinical diagnostic laboratory tests are paid based upon these reported private payer rates. For clinical diagnostic laboratory tests that are assigned a new or substantially revised code, initial payment rates for clinical diagnostic laboratory tests that are not advanced diagnostic laboratory tests will be assigned by the cross-walk or gap-fill methodology, as under prior law. Initial payment rates for new advanced diagnostic laboratory tests will be based on the actual list charge for the laboratory test.

The payment rates calculated under PAMA went into effect starting January 1, 2018. Where applicable, 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 2021 through 2023 (with a second round of private payer rate reporting in 2021 to establish rates for 2022 through 2024).

PAMA codified Medicare coverage rules for laboratory tests by requiring any local coverage determination to be made following the local coverage determination process. PAMA also authorizes CMS to consolidate coverage policies for clinical laboratory tests among one to four laboratory-specific MACs. These same contractors may also be designated to process claims if CMS determines that such a model is appropriate. It is unclear whether CMS will proceed with contractor consolidation under this authorization.

PAMA also authorized the adoption of new, temporary billing codes and/or unique test identifiers for FDA-cleared or approved tests as well as advanced diagnostic laboratory tests. The American Medical Association has created a new section of billing codes, Proprietary Laboratory Analyses (PLA), to facilitate implementation of this section of PAMA. These codes may apply to one or more of our tests if we apply for PLA coding.

In March 2018, CMS published a national coverage determination, or NCD, for next generation sequencing, or NGS tests for somatic (acquired) cancer testing. CMS subsequently updated this NCD in January 2020 to address coverage for NGS tests for germline (inherited) cancer testing and to clarify certain aspects of Medicare’s coverage of NGS for somatic cancer testing. For somatic cancer testing, the updated NCD establishes full coverage for FDA-approved or FDA-cleared NGS-based companion diagnostic assays that report results using report templates that specify treatment options when offered for their FDA-approved or FDA-cleared use(s), ordered by the patient’s treating physician for Medicare beneficiaries with advanced cancer (recurrent, relapsed, refractory, metastatic, or advanced stage III or IV cancer) who have not have previously been tested with the same test using NGS for the same cancer genetic content, and have decided to seek further cancer treatment. The NCD also gives MACs the authority to establish local coverage for NGS-based somatic cancer assays that are not FDA-approved or FDA-cleared companion diagnostics when offered to patients meeting the above-referenced criteria. It appears that NGS-based somatic cancer tests provided for patients with cancer that do not meet the above-referenced criteria - e.g., patients with earlier stage cancers - are nationally non-covered under the NCD.



Effective January 27, 2020, the NCD also establishes full coverage for FDA-approved or FDA-cleared NGS-based germline tests that report results using report templates that specify treatment options when ordered by the patient's treating physician for patients with ovarian or breast cancer, a clinical indication for germline testing for hereditary breast or ovarian cancer, and a risk factor for germline breast or ovarian cancer, provided the patient has not previously been tested with the same germline test using NGS for the same germline genetic content. The NCD also gives MACs the authority to establish local coverage for NGS-based germline tests for ovarian or breast cancer that are not FDA-approved or FDA-cleared, as well as for NGS-based tests for any other cancer diagnosis (regardless of the test's FDA regulatory status) when offered to patients meeting the above-referenced criteria for germline testing. Since we already have local coverage for our germline tests for ovarian and breast cancer, we believe that the NCD will not have a material impact on which of our tests will be reimbursable by CMS for Medicare patients.

### ***Clinical Laboratory Improvement Amendments of 1988, or CLIA***

Our clinical reference laboratories in California are required to hold certain federal certificates to conduct our business. Under CLIA, we are required to hold certificates applicable to the type of laboratory examinations we perform and to comply with standards covering personnel, facilities administration, inspections, quality control, quality assurance and proficiency testing.

We have current certifications under CLIA to perform testing at our laboratory locations in San Francisco and Irvine, California. To renew our CLIA certifications, we are subject to survey and inspection every two years to assess compliance with program standards. Moreover, CLIA inspectors may make random inspections of our clinical reference laboratories. The regulatory and compliance standards applicable to the testing we perform may change over time, and any such changes could have a material effect on our business.

If our clinical reference laboratories are out of compliance with CLIA requirements, we may be subject to sanctions such as suspension, limitation or revocation of our CLIA certificates, as well as directed plan of correction, state on-site monitoring, civil money penalties, civil injunctive suit or criminal penalties. We must maintain CLIA compliance and certifications to be eligible to bill for diagnostic services provided to Medicare and Medicaid beneficiaries. If we were to be found out of compliance with CLIA requirements and subjected to sanction, our business could be harmed.

### ***Laboratory licensure requirements***

We are required to maintain in-state licenses to conduct testing in California. California laws establish standards for day-to-day operations of our laboratories in San Francisco and Irvine. Such laws mandate proficiency testing, which involves testing of specimens that have been specifically prepared for the laboratories. If our clinical reference laboratories are out of compliance with California standards, the California Department of Health Services, or DHS, may suspend, restrict or revoke our licenses to operate our clinical reference laboratories, assess substantial civil money penalties, or impose specific corrective action plans. Any such actions could materially affect our business. We maintain current licenses in good standing with DHS. However, we cannot provide assurance that DHS will at all times in the future find us to be in compliance with all such laws.

Several states require the licensure of out-of-state laboratories that accept specimens from those states. Our laboratories hold the required out-of-state laboratory licenses for Maryland, New York, Pennsylvania, and Rhode Island.

In addition to having laboratory licenses in New York, our clinical reference laboratories in California are also required to obtain approval on a test-specific basis by the New York State Department of Health, or NYDOH, before specific testing is performed on samples from New York.

Other states may adopt similar licensure requirements in the future, which may require us to modify, delay or stop our operations in such jurisdictions. Complying with licensure requirements in new jurisdictions may be expensive, time-consuming, and subject us to significant and unanticipated delays. If we identify any other state with such requirements, or if we are contacted by any other state advising us of such requirements, we intend to follow instructions from the state regulators as to how we should comply with such requirements.

We may also be subject to regulation in foreign jurisdictions as we seek to expand international utilization of our tests or such jurisdictions adopt new licensure requirements, which may require review of our tests in order to offer them or may have other limitations such as restrictions on the transport of human blood or saliva necessary for us to perform our tests that may limit our ability to make our tests available outside of the United States.

## ***U.S. Food and Drug Administration, or FDA***

We provide our tests as laboratory-developed tests, or LDTs. CMS and certain state agencies regulate the performance of LDTs (as authorized by CLIA and state law, respectively).

Historically, the FDA has exercised enforcement discretion with respect to most LDTs and has not required laboratories that furnish LDTs to comply with the agency's requirements for medical devices (e.g., establishment registration, device listing, quality systems regulations, premarket clearance or premarket approval, and post-market controls). In recent years, however, the FDA has stated it intends to end its policy of general enforcement discretion and regulate certain LDTs as medical devices. To this end, on October 3, 2014, the FDA issued two draft guidance documents, entitled "Framework for Regulatory Oversight of Laboratory Developed Tests (LDTs)" and "FDA Notification and Medical Device Reporting for Laboratory Developed Tests (LDTs)," respectively, that set forth a proposed risk-based regulatory framework that would apply varying levels of FDA oversight to LDTs. The FDA has indicated that it does not intend to modify its policy of enforcement discretion until the draft guidance documents are finalized. Subsequently, on January 13, 2017, the FDA published a "discussion paper" in which the agency outlined a substantially revised "possible approach" to the oversight of LDTs. The discussion paper explicitly states that it is not a final version of the 2014 draft guidance and that it does not represent the agency's "formal position;" rather, the discussion paper describes the evolution of the agency's thinking on LDTs, which the agency posted to "spur further dialogue." Notably, in the discussion paper, the agency expressed its willingness to consider "grandfathering" currently marketed LDTs from most or all FDA regulatory requirements. It is unclear at this time when, or if, the FDA will finalize its plans to end enforcement discretion, and even then, the new regulatory requirements are expected to be phased-in over time. Nevertheless, the FDA may decide to regulate certain LDTs on a case-by-case basis at any time.

Legislative proposals addressing the FDA's oversight of LDTs have been introduced in previous Congresses, and we expect that new legislative proposals will be introduced from time-to-time. The likelihood that Congress will pass such legislation and the extent to which such legislation may affect the FDA's plans to regulate certain LDTs as medical devices is difficult to predict at this time.

If the FDA ultimately regulates certain LDTs as medical devices, whether via final guidance, final regulation, or as instructed by Congress, our tests may be subject to certain additional regulatory requirements. Complying with the FDA's requirements for medical devices can be expensive, time-consuming, and subject us to significant or unanticipated delays. Insofar as we may be required to obtain premarket clearance or approval to perform or continue performing an LDT, we cannot assure you that we will be able to obtain such authorization. Even if we obtain regulatory clearance or approval where required, such authorization may not be for the intended uses that we believe are commercially attractive or are critical to the commercial success of our tests. As a result, the application of the FDA's medical device requirements to our tests could materially and adversely affect our business, financial condition, and results of operations.

Notwithstanding the FDA's current position with respect to oversight of our tests, we may voluntarily decide to pursue FDA pre-market review for our current tests and/or tests we may offer in the future if we determine that doing so would be appropriate from a strategic perspective – e.g., if CMS indicated that it no longer intended to cover tests offered as LDTs.

Failure to comply with applicable FDA regulatory requirements may trigger a range of enforcement actions by the FDA including warning letters, civil monetary penalties, injunctions, criminal prosecution, recall or seizure, operating restrictions, partial suspension or total shutdown of operations, and denial of or challenges to applications for clearance or approval, as well as significant adverse publicity.

In addition, in November 2013, the FDA issued final guidance regarding the distribution of products labeled for research use only. Certain of the reagents and other products we use in our tests are labeled as research use only products. Certain of our suppliers may cease selling research use only products to us and any failure to obtain an acceptable substitute could significantly and adversely affect our business, financial condition and results of operations.

## ***HIPAA and state privacy, security and breach notification laws***

Under the administrative simplification provisions of the Health Insurance Portability and Accountability Act of 1996, or HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, the U.S. Department of Health and Human Services issued regulations that establish uniform standards governing the conduct of certain electronic healthcare transactions and requirements for protecting the privacy and security of protected health information used or disclosed by covered entities, including health care providers and their respective business associates, including the business associates' subcontractors. Four principal regulations

with which we are required to comply have been issued in final form under HIPAA and HITECH: privacy regulations, security regulations, the breach notification rule, and standards for electronic transactions, which establish standards for common healthcare transactions.

The privacy regulations cover the use and disclosure of protected health information by covered entities as well as business associates, which are persons or entities that perform certain functions for or on behalf of a covered entity that involve the creation, receipt, maintenance, or transmittal of protected health information. Business associates are defined to include a subcontractor to whom a business associate delegates a function, activity, or service, other than in the capacity of the business associate's workforce. As a general rule, a covered entity or business associate may not use or disclose protected health information except as permitted under the privacy regulations. The privacy regulations also set forth certain rights that an individual has with respect to his or her protected health information maintained by a covered entity or business associate, including the right to access or amend certain records containing his or her protected health information, or to request restrictions on the use or disclosure of his or her protected health information.

Covered entities and business associates also must comply with the security regulations, which establish requirements for safeguarding the confidentiality, integrity, and availability of protected health information that is electronically transmitted or electronically stored. In addition, HITECH established, among other things, certain breach notification requirements with which covered entities and business associates must comply. In particular, a covered entity must notify any individual whose unsecured protected health information is breached according to the specifications set forth in the breach notification rule. A covered entity must also notify the Secretary of the U.S. Department of Health and Human Services and, under certain circumstances, the media of a breach of unsecured protected health information.

There are significant civil and criminal penalties that may be imposed on a covered entity or business associate for violating HIPAA. A covered entity or business associate may also be liable for civil money penalties for a violation that is based on an act or omission of any of its agents, including a downstream business associate, as determined according to the federal common law of agency. Additionally, to the extent that we submit electronic healthcare claims and payment transactions that do not comply with the electronic data transmission standards established under HIPAA and HITECH, payments to us may be delayed or denied.

The HIPAA privacy, security, and breach notification regulations establish a uniform federal "floor" and do not supersede state laws that are more stringent or provide individuals with greater rights with respect to the privacy or security of, and access to, their records containing protected health information or insofar as such state laws apply to personal information that is broader in scope than protected health information as defined under HIPAA. Massachusetts, for example, has a state law that protects the privacy and security of personal information of Massachusetts residents. In addition, every U.S. state has a data breach notification law that requires entities to report certain security incidents to affected consumers and, in some instances, state regulators and consumer reporting agencies. Many states also have laws or regulations that specifically apply to genetic testing and genetic information and are more stringent than the standards under HIPAA. These state genetic information privacy laws include specific informed consent requirements for the conduct of genetic testing and restrict the collection, use, disclosure, or retention of genetic information. Failure to comply with applicable state laws that impose privacy, security, or breach notification requirements for genetic or other personal information could result in civil or criminal penalties, administrative actions, or private causes of action by patients, and adversely affect our business, results of operations and reputation.

#### ***Federal and state consumer protection laws***

The Federal Trade Commission, or FTC, is an independent U.S. law enforcement agency charged with protecting consumers and enhancing competition across broad sectors of the economy. The FTC's primary legal authority comes from Section 5 of the FTC Act, which prohibits unfair or deceptive acts or practices in the marketplace. The FTC has increasingly used this broad authority to police data privacy and security, using its powers to investigate and bring lawsuits. Where appropriate, the FTC can seek a variety of remedies, such as but not limited to the implementation of comprehensive privacy and security programs, biennial assessments by independent experts, monetary redress to consumers, and provision of robust notice and choice mechanisms to consumers. In addition to its enforcement mechanisms, the FTC uses a variety of tools to protect consumers' privacy and personal information, including pursuing enforcement actions to stop violations of law, conducting studies and issuing reports, hosting public workshops, developing educational materials, and testifying before the U.S. Congress on issues that affect consumer privacy.

The vast majority of cases brought by the FTC fall under the "deceptive" prong of Section 5. These cases often involve a failure on the part of a company to adhere to its own privacy and data protection principles set forth

in its policies. To avoid Section 5 violations, the FTC encourages companies to build privacy protections and safeguards into relevant portions of the business, and consider privacy and data protection as the company grows and evolves. In addition, privacy notices should clearly and accurately disclose the type(s) of information the company collects, how the company uses and shares the information, and the security measures used by the company to protect the information.

In recent years, the FTC's enforcement under Section 5 has included alleged violations of the "unfairness" prong. Many of these cases have alleged that companies were unfair to consumers because they failed to take reasonable and necessary measures to protect consumer data. The FTC has not provided bright line rules defining what constitutes "reasonable and necessary measures" for implementing a cybersecurity program, but it has provided guidance, tips and advice for companies. The FTC has also published past complaints and consent orders, which it urges companies use as examples to help avoid an FTC enforcement action, even if a data breach or loss occurs.

In addition to the FTC Act, most U.S. states have unfair and deceptive acts and practices statutes, or UDAP statutes, that substantially mirror the FTC Act and have been applied in the privacy and data security context. These vary in substance and strength from state to state. Many have broad prohibitions against unfair and deceptive acts and practices, while New York's UDAP statute, for instance, is currently limited to only deceptive acts and practice. These statutes generally allow for private rights of action and are enforced by the states' Attorneys General.

### ***California Consumer Privacy Act***

The California Consumer Privacy Act, or CCPA, is a comprehensive consumer privacy law that took effect on January 1, 2020, and regulates how certain for-profit businesses that do business in California collect, use, and disclose the personal information of consumers who reside in California. Among other things, the CCPA confers to California consumers the right to receive notice of the categories of personal information to be collected by a business, how the business will use and share the personal information, and the third parties who will receive the personal information; the rights to access, delete, or transfer personal information; and the right to receive equal service and pricing from a business after exercising a consumer right granted by the CCPA. In addition, the CCPA allows California consumers the right to opt out of the "sale" of their personal information, which the CCPA defines broadly as any disclosure of personal information to a third party in exchange for monetary or other valuable consideration. The CCPA also requires a business to implement reasonable security procedures to safeguard personal information against unauthorized access, use, or disclosure.

The California Attorney General has authority to enforce the CCPA and its implementing regulations against covered businesses beginning on July 1, 2020. The CCPA provides for civil penalties for violations, as well as private right of action for data breaches that result from a business' failure to implement reasonable security procedures.

### ***Privacy and data protection laws***

There are a growing number of jurisdictions all over the world that have privacy and data protection laws. These laws are typically triggered by a company's establishment or physical location in the jurisdiction, data processing activities that take place in the jurisdiction, and/or the processing of personal information about individuals located in that jurisdiction. Certain international privacy and data protection laws, such as those in the European Union, can be more restrictive and prescriptive than those in the U.S., while other jurisdictions can have laws less restrictive or prescriptive than those in the U.S. Enforcement of these laws vary from jurisdiction to jurisdiction, with a variety of civil or criminal penalties, or private rights of action.

The European Union's General Data Protection Regulation, or GDPR, took effect on May 25, 2018. The GDPR extraterritorially applies to a business outside the European Union that offers goods or services to, or monitors the behavior of individuals who are located in the European Union. The GDPR imposes strict requirements on controllers and processors of personal data, including enhanced protections for "special categories" of personal data, which includes sensitive information such as health and genetic information of data subjects in the European Union. The GDPR also grants individuals various rights in relation to their personal data including the rights of access, rectification, objection to certain processing and deletion. The GDPR provides an individual with an express right to seek legal remedies if the individual believes his or her rights have been violated. Failure to comply with the requirements of the GDPR or the related national data protection laws of the member states of the European Union, which may deviate from or be more restrictive than the GDPR, may result in significant administrative fines issued by European Union regulators.

## ***Federal, state and foreign fraud and abuse laws***

In the United States, there are various fraud and abuse laws with which we must comply, and we are potentially subject to regulation by various federal, state and local authorities, including CMS, other divisions of the U.S. Department of Health and Human Services (e.g., the Office of Inspector General), the U.S. Department of Justice, and individual U.S. Attorney offices within the Department of Justice, and state and local governments. We also may be subject to foreign fraud and abuse laws.

In the United States, the federal Anti-Kickback Statute prohibits knowingly and willfully offering, paying, soliciting or receiving remuneration, directly or indirectly, overtly or covertly, in cash or in kind, to induce or in return for the referral of an individual for the furnishing of or arranging for the furnishing of any item or service for which payment may be made in whole or in part by a federal healthcare program, or the purchasing, leasing, ordering or arranging for or recommending purchasing, leasing or ordering of any good, facility, service or item for which payment may be made in whole or in part by a federal healthcare program. Many courts have held that the Anti-Kickback Statute may be violated if any one purpose of the remuneration is to induce or reward patient referrals or other federal healthcare program business, regardless of whether there are other legitimate purposes for the arrangement. The definition of "remuneration" has been broadly interpreted to include anything of value, including gifts, discounts, credit arrangements, payments of cash, consulting fees, waivers of co-payments, ownership interests, and providing anything at less than its fair market value. The Anti-Kickback Statute is broad and may technically prohibit many innocuous or beneficial arrangements within the healthcare industry. The Anti-Kickback Statute includes several statutory exceptions, and the U.S. Department of Health and Human Services has issued a series of regulatory "safe harbors." These exceptions and safe harbor regulations set forth certain requirements for various types of arrangements, which, if met, will protect the arrangement from potential liability under the Anti-Kickback Statute. Although full compliance with the statutory exceptions or regulatory safe harbors ensures against liability under the federal Anti-Kickback Statute, the failure of a transaction or arrangement to fit within a specific statutory exception or regulatory safe harbor does not necessarily mean that the transaction or arrangement is illegal or that prosecution under the federal Anti-Kickback Statute will be pursued. Penalties for violations of the Anti-Kickback Statute are severe, and include imprisonment, criminal fines, civil money penalties, and exclusion from participation in federal healthcare programs. Many states also have anti-kickback statutes, some of which may apply to items or services reimbursed by any third-party payer, including commercial insurers.

There are also federal laws related to healthcare fraud and false statements, among others, that apply to healthcare matters. The healthcare fraud statute prohibits, among other things, knowingly and willfully executing a scheme to defraud any healthcare benefit program, including private payers. A violation of this statute is a felony and may result in fines, imprisonment, or exclusion from governmental payer programs such as the Medicare and Medicaid programs. The false statements statute prohibits, among other things, knowingly and willfully falsifying, concealing or covering up a material fact, or making any materially false, fictitious or fraudulent statement in connection with the delivery of or payment for healthcare benefits, items, or services. A violation of this statute is a felony and may result in fines, imprisonment, or exclusion from governmental payer programs.

Another development affecting the healthcare industry is the increased enforcement of the federal False Claims Act and, in particular, actions brought pursuant to the False Claims Act's "whistleblower" or "qui tam" provisions. The False Claims Act imposes liability on any person or entity that, among other things, knowingly presents, or causes to be presented, a false or fraudulent claim for payment by a federal governmental payer program. The qui tam provisions of the False Claims Act allow a private individual to bring actions on behalf of the federal government alleging that the defendant has defrauded the federal government by presenting or causing to be presented a false claim to the federal government and permit such individuals to share in any amounts paid by the entity to the government in fines or settlement. When an entity is determined to have violated the False Claims Act, it may be required to pay up to three times the actual damages sustained by the government, plus civil penalties for each false claim. For penalties assessed after January 29, 2018, whose associated violations occurred after November 2, 2015, the penalties range from \$11,181 to \$22,363 for each false claim. The minimum and maximum per claim penalty amounts are subject to annual increases for inflation.

In addition, various states have enacted false claim laws analogous to the federal False Claims Act, and some of these state laws apply where a claim is submitted to any third-party payer and not only a governmental payer program.

Additionally, the civil monetary penalties statute imposes penalties against any person or entity that, among other things, is determined to have knowingly presented or caused to be presented a claim to a federal health program that the person knows or should know is for an item or service that was not provided as claimed or for a claim that is false or fraudulent. This law also prohibits 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 for items or services reimbursable by Medicare or a state healthcare program. There are several exceptions to the prohibition on beneficiary inducement.

The Eliminating Kickbacks in Recovery Act of 2018, or EKRA, prohibits payments for referrals to recovery homes, clinical treatment facilities, and laboratories. EKRA's reach extends beyond federal health care programs, to include private insurance (i.e., it is an "all payer" statute). For purposes of EKRA, the term "laboratory" is defined broadly and without reference to any connection to substance use disorder treatment. EKRA is a criminal statute and violations can result in fines of up to \$200,000, up to 10 years in prison, or both, per violation. The law includes a limited number of exceptions, some of which closely align with corresponding Anti-Kickback Statute exceptions and safe harbors and others that materially differ.

We are also subject to the U.S. Foreign Corrupt Practices Act, or FCPA, which prohibits companies and their intermediaries from making payments in violation of law to non-U.S. government officials for the purpose of obtaining or retaining business or securing any other improper advantage. In Europe various countries have adopted anti-bribery laws providing for severe consequences, in the form of criminal penalties and/or significant fines, for individuals and/or companies committing a bribery offence. Violations of these anti-bribery laws, or allegations of such violations, could have a negative impact on our business, results of operations and reputation. For instance, in the United Kingdom, under the Bribery Act 2010, which went into effect in July 2011, a bribery occurs when a person offers, gives or promises to give a financial or other advantage to induce or reward another individual to improperly perform certain functions or activities, including any function of a public nature. Bribery of foreign public officials also falls within the scope of the Bribery Act 2010. Under the new regime, an individual found in violation of the Bribery Act 2010, faces imprisonment of up to ten years. In addition, the individual can be subject to an unlimited fine, as can commercial organizations for failure to prevent bribery.

### ***Physician referral prohibitions***

A federal law directed at "self-referrals," commonly known as the "Stark Law," prohibits a physician from referring a patient to an entity for certain Medicare-covered designated health services, including laboratory services, if the physician, or an immediate family member, has a financial relationship with the entity, unless an exception applies. The Stark Law also prohibits an entity from billing for services furnished pursuant to a prohibited referral. A physician or entity that engages in a scheme to circumvent the Stark Law's referral prohibition may be fined up to \$172,137 for each such arrangement or scheme. In addition, any person who presents or causes to be presented a claim to the Medicare program in violation of the Stark Law is subject to civil monetary penalties of up to \$25,820 per service, an assessment of up to three times the amount claimed and possible exclusion from participation in federal healthcare programs. Bills submitted in violation of the Stark Law may not be paid by Medicare, and any person collecting any amounts with respect to any such prohibited bill is obligated to refund such amounts. Many states have comparable laws that apply to services covered by other third-party payers. The Stark Law also prohibits state receipt of federal Medicaid matching funds for services furnished pursuant to a prohibited referral. This provision of the Stark Law has not been implemented by regulations, but some courts have held that the submission of claims to Medicaid that would be prohibited as self-referrals under the Stark Law for Medicare could implicate the False Claims Act.

### ***Corporate practice of medicine***

Numerous states have enacted laws prohibiting business corporations, such as us, from practicing medicine and employing or engaging clinicians to practice medicine, generally referred to as the prohibition against the corporate practice of medicine. These laws are designed to prevent interference in the medical decision-making process by anyone who is not a licensed physician. For example, California's Medical Board has indicated that determining what diagnostic tests are appropriate for a particular condition and taking responsibility for the ultimate overall care of the patient, including providing treatment options available to the patient, would constitute the unlicensed practice of medicine if performed by an unlicensed person. Violation of these corporate practice of medicine laws may result in civil or criminal fines, as well as sanctions imposed against us and/or the professional through licensure proceedings.

## Intellectual property

We rely on a combination of intellectual property rights, including trade secrets, copyrights, trademarks, customary contractual protections and, to a lesser extent, patents, to protect our core technology and intellectual property. With respect to patents, we believe that the practice of patenting individual genes, along with patenting tools and methods specific to individual genes, has impeded the progress of the genetic testing industry beyond single gene tests and is antithetical to our core principle that patients should own and control their own genomic information. The U.S. Supreme Court has issued a series of unanimous (9-0) decisions setting forth limits on the patentability of natural phenomena, natural laws, abstract ideas and their applications—i.e., *Mayo Collaborative v. Prometheus Laboratories (2012)*, or *Mayo*, *Association for Molecular Pathology v. Myriad Genetics (2013)*, or *Myriad*, and *Alice Corporation v. CLS Bank (2014)*, or *Alice*. As discussed below, we believe the *Mayo*, *Myriad* and *Alice* decisions bring clarity to the limits to which patents may cover specific genes, mutations of such genes, or gene-specific technology for determining a patient's genomic information.

### Patents

U.S. Supreme Court cases have clarified that naturally occurring DNA sequences are natural phenomena, which should not be patentable. On June 13, 2013, the U.S. Supreme Court decided *Myriad*, a case challenging the validity of patent claims held by Myriad relating to the cancer genes BRCA1 and BRCA2. The *Myriad* Court held that genomic DNAs that have been isolated from, or have the same sequence as, naturally occurring samples, such as the DNA constituting the BRCA1 and BRCA2 genes or fragments thereof, are not eligible for patent protection. Instead, the *Myriad* Court held that only those complementary DNAs (cDNAs) which have a sequence that differs from a naturally occurring fragment of genomic DNA may be patent eligible. Because it will be applied by other courts to all gene patents, the holding in *Myriad* also invalidates patent claims to other genes and gene variants. Prior to *Myriad*, on August 16, 2012, the U.S. Court of Appeals for the Federal Circuit had held that certain patent claims of Myriad directed to methods of comparing or analyzing BRCA1 and BRCA2 sequences to determine whether or not a person has a variant or mutation are unpatentable abstract processes, and Myriad did not appeal such ruling.

We do not currently have any patents or patent applications directed to the sequences of specific genes or variants of such genes, nor do we rely on any such in-licensed patent rights of any third party. We believe that correlations between specific gene variants and a person's susceptibility to certain conditions or diseases are natural laws that are not patentable under the U.S. Supreme Court's decision in *Mayo*. The *Mayo* case involved patent claims directed to optimizing, on a patient-specific basis, the dosage of a certain drug by measuring its metabolites in a patient. The *Mayo* Court determined that patent claims directed at detection of natural correlations, such as the correlation between drug metabolite levels in a patient and that drug's optimal dosage for such patient, are not eligible for patent protection. The *Mayo* Court held that claims based on this type of comparison between an observed fact and an understanding of that fact's implications represent attempts to patent a natural law and, moreover, when the processes for making the comparison are not themselves sufficiently inventive, claims to such processes are similarly patent-ineligible. On June 19, 2014, the U.S. Supreme Court decided *Alice*, where it amplified its *Mayo* and *Myriad* decisions and clarified the analytical framework for distinguishing between patents that claim laws of nature, natural phenomena and abstract ideas and those that claim patent-eligible applications of such concepts. According to the *Alice* Court, the analysis depends on whether a patent claim directed to a law of nature, a natural phenomenon or an abstract idea contains additional elements, an "inventive concept," that "is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself," (citing *Mayo*).

We believe that *Mayo*, *Myriad* and *Alice* not only render as unpatentable genes, gene fragments and the detection of a person's sequence for a gene, but also have the same effect on generic applications of conventional technology to specific gene sequences. For example, we believe that generic claims to primers or probes directed to specific gene sequences and uses of such primers and probes in determining a person's genetic information are not patentable. We do not currently have any patents or patent applications directed to such subject matter nor have we in-licensed such patents rights of any third party.

Unlike patents directed to specific genes, we do rely upon, in part, patent protection to protect technology that is not gene-specific and that provides us with a potential competitive advantage as we focus on making comprehensive genetic information less expensive and more broadly available to our customers. In this regard, we have issued U.S. patents, pending U.S. patent applications and corresponding non-U.S. patents and patent applications directed to various aspects of our laboratory, analytic and business practices. We intend to pursue further patent protection where appropriate.

**Trade secrets**

In addition to seeking patent protection for some of our laboratory, analytic and business practices, we also rely on trade secrets, including unpatented know-how, technology and other proprietary information, to maintain and develop our competitive position. We have developed proprietary procedures for both the laboratory processing of patient samples and the analysis of the resulting data to generate clinical reports. For example, we have automated aspects of our processes for curating information about known variants, identifying variants in an individual's sequence information, associating those variants with known information about their potential effects on disease, and presenting that information for review by personnel responsible for its interpretation and for the delivery of test reports to clinicians and patients. We try to protect these trade secrets, in part, by taking reasonable steps to keep them confidential. This includes entering into nondisclosure and confidentiality agreements with parties who have access to them, such as our employees and certain third parties. We also enter into invention or patent assignment agreements with our employees and consultants that obligate them to assign to us any inventions developed in the course of their work for us. However, we may not enter into such agreements with all relevant parties, and these parties may not abide by the terms of their agreements. Despite measures taken to protect our intellectual property, unauthorized parties might copy or independently develop and commercially exploit aspects of our technology or obtain and use information that we regard as proprietary.

**Trademarks**

We work hard to achieve a high level of quality in our operations and to provide our customers with a superior experience when interacting with us. As a consequence, our brand is very important to us, as it is a symbol of our reputation and representative of the goodwill we seek to generate with our customers. As a consequence, we have invested significant resources in protection of our trademarks.

**Environmental matters**

Our operations require the use of hazardous materials (including biological materials) that subject us to a variety of federal, state and local environmental and safety laws and regulations. Some of these regulations provide for strict liability, holding a party potentially liable without regard to fault or negligence. We could be held liable for damages and fines as a result of our, or others', business operations should contamination of the environment or individual exposure to hazardous substances occur. We cannot predict how changes in laws or new regulations will affect our business, operations or the cost of compliance.

**Raw materials and suppliers**

We rely on a limited number of suppliers, or, in some cases, sole suppliers, including Illumina, Inc., Integrated DNA Technologies Incorporated, Roche Holdings Ltd. and Twist Bioscience Corporation for certain laboratory reagents, as well as sequencers and other equipment and materials which we use in our laboratory operations. We rely on Illumina as the sole supplier of next generation sequencers and associated reagents and as the sole provider of maintenance and repair services for these sequencers. Our laboratory operations could be interrupted if we encounter delays or difficulties in securing these reagents, sequencers or other equipment or materials, and if we cannot obtain an acceptable substitute. Any such interruption could significantly affect our business, financial condition, results of operations and reputation. We believe that there are only a few other manufacturers that are currently capable of supplying and servicing the equipment necessary for our laboratory operations, including sequencers and various associated reagents. The use of equipment or materials provided by these replacement suppliers would require us to alter our laboratory operations. Transitioning to a new supplier would be time consuming and expensive, may result in interruptions in our laboratory operations, could affect the performance specifications of our laboratory operations or could require that we revalidate our tests. We cannot be certain that we will be able to secure alternative equipment, reagents and other materials, or bring such equipment, reagents and materials on line and revalidate them without experiencing interruptions in our workflow. If we encounter delays or difficulties in securing, reconfiguring or revalidating the equipment and reagents we require for our tests, our business and reputation could be adversely affected.

**Customer concentration and seasonality**

We receive payment for our tests from partners, patients, institutional customers and third-party payers. As of December 31, 2019, substantially all our revenue has been derived from test reports generated from our assays. See information regarding our customer concentration in Note 2, "Summary of significant accounting policies" in Notes to Consolidated Financial Statements in Part II, Item 8 of this Annual Report.



We have historically experienced higher revenue in our fourth quarter compared to other quarters in our fiscal year due in part to seasonal demand of our tests from patients who have met their annual insurance deductible. However, changes in our payer mix might cause these historical seasonal patterns to be different than future patterns of revenue or financial performance.

## Employees

We had approximately 1,300 employees as of December 31, 2019.

## Information about our Executive Officers

The names of our executive officers and other corporate officers, and their ages as of February 28, 2020, are as follows:

Name	Age	Position
<b>Executive officers</b>		
Sean E. George, Ph.D.	46	President, Chief Executive Officer, Director and Co-Founder
Lee Bendekgey	62	Chief Operating Officer
Thomas R. Brida	49	General Counsel and Secretary
Shelly D. Guyer	59	Chief Financial Officer
Robert L. Nussbaum, M.D.	70	Chief Medical Officer
Katherine A. Stueland	44	Chief Commercial Officer

*Sean E. George, Ph.D.* is one of our co-founders and has been our President and Chief Executive Officer since January 2017, a position he also held from January 2010 through August 2012. Dr. George also served as our President since August 2012 and he served as our Chief Operating Officer from August 2012 until January 2017. He has also served as a director since January 2010. Prior to co-founding Invitae, Dr. George served as Chief Operating Officer from 2007 to November 2009 at Navigenics, Inc., a personalized medicine company. Previously, he served as Senior Vice President of Marketing and Senior Vice President, Life Science Business at Affymetrix, Inc., a provider of life science and molecular diagnostic products, as well as Vice President, Labeling and Detection Business at Invitrogen Corporation, a provider of tools to the life sciences industry, during his tenure there from 2002 to 2007. Dr. George holds a B.S. in Microbiology and Molecular Genetics from the University of California Los Angeles, an M.S. in Molecular and Cellular Biology from the University of California Santa Barbara, and a Ph.D. in Molecular Genetics from the University of California Santa Cruz.

*Lee Bendekgey* has served as our Chief Operating Officer since June 2017. Mr. Bendekgey also served as our Chief Financial Officer from November 2013 to June 2017 and as our General Counsel from November 2013 through January 2017. Prior to joining our company, he was the General Counsel of DNAnexus, Inc., a cloud-based genome informatics and data management company, from September 2011 to October 2013. From March 2009 until September 2011, Mr. Bendekgey pursued personal interests. Prior to that, he was Chief Financial Officer and General Counsel for Nuvelo, Inc., a biopharmaceutical company, from July 2004 to March 2009. Mr. Bendekgey also served as General Counsel and Chief Financial Officer for Incyte Corporation from 1998 to 2004. Mr. Bendekgey holds a B.A. in French and Political Science from Kalamazoo College and a J.D. from Stanford Law School.

*Thomas R. Brida* has served as our General Counsel since January 2017. Mr. Brida also served as our Deputy General Counsel from January 2016 to January 2017. Prior to joining Invitae, he was Associate General Counsel at Bio-Rad Laboratories, a life science research and clinical diagnostics manufacturer, from January 2004 to January 2016. He holds a B.A. from Stanford University and a J.D. from the U.C. Berkeley School of Law.

*Shelly D. Guyer* has served as our Chief Financial Officer since June 2017. Ms. Guyer served as Chief Financial Officer of Veracyte, Inc., a genomic diagnostics company, from April 2013 to December 2016 and served as Veracyte's Secretary from April 2013 to March 2014. Previously, she served as Chief Financial Officer and Executive Vice President of Finance and Administration of iRhythm Technologies, Inc., a digital healthcare company, from April 2008 to December 2012. From March 2006 to August 2007, Ms. Guyer served as Vice President of Business Development and Investor Relations of Nuvelo, Inc., a biopharmaceutical company. Prior to joining Nuvelo, Ms. Guyer worked at J.P. Morgan Securities and its predecessor companies for over 17 years, serving in a variety of roles including in healthcare investment banking. Ms. Guyer currently serves as a director of

NGM Biopharmaceuticals, Inc., a publicly held biopharmaceutical company. Ms. Guyer holds an A.B. in Politics from Princeton University and an M.B.A. from the Haas School of Business at the University of California Berkeley.

*Robert L. Nussbaum, M.D.* has served as our Chief Medical Officer since August 2015. From April 2006 to August 2015, he was chief of the Division of Genomic Medicine at UCSF Health where he also held leadership roles in the Cancer Genetics and Prevention Program beginning in January 2009 and the Program in Cardiovascular Genetics beginning in July 2007. From April 2006 to August 2015, he served as a member of the UCSF Institute for Human Genetics. Prior to joining UCSF Health, Dr. Nussbaum was chief of the Genetic Disease Research Branch of the National Human Genome Research Institute, one of the National Institutes of Health, from 1994 to 2006. He is a member of the National Academy of Medicine and a fellow at the American Academy of Arts and Sciences. Dr. Nussbaum is a board-certified internist and medical geneticist who holds a B.S. in Applied Mathematics from Harvard College and an M.D. from Harvard Medical School in the Harvard-MIT joint program in Health Sciences and Technology. He completed his residency in internal medicine at Barnes-Jewish Hospital and a fellowship in medical genetics at the Baylor College of Medicine.

*Katherine A. Stueland* has served as our Chief Commercial Officer since October 2016. From January 2014 to October 2016, she served as our head of communications and investor relations. Prior to joining Invitae, Ms. Stueland was a Principal at Vivo Communications, a healthcare communications company, from January 2013 to December 2013. Previously, she served as Vice President, Communications and Investor Relations at Dendreon Corporation, a biotechnology company. Ms. Stueland holds a B.S. in English Literature from Miami University in Ohio.

## **General Information**

We were incorporated in the State of Delaware on January 13, 2010 under the name Locus Development, Inc. and changed our name to Invitae Corporation in 2012. In February 2015 we completed an initial public offering of our common stock.

Our principal executive offices are located at 1400 16th Street, San Francisco, California 94103, and our telephone number is (415) 374-7782. Our website address is [www.invitae.com](http://www.invitae.com). The information contained on, or that can be accessed through, our website is not part of this annual report on Form 10-K.

We make available free of charge on our website our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports, as soon as reasonably practicable after we electronically file or furnish such materials to the Securities and Exchange Commission, or SEC. You may obtain a free copy of these reports in the Investor Relations section of our website, [www.invitae.com](http://www.invitae.com). All reports that we file are also available at [www.sec.gov](http://www.sec.gov).

## **ITEM 1A. Risk Factors.**

### **Risks related to our business and strategy**

#### ***We expect to continue incurring significant losses, and we may not successfully execute our plan to achieve or sustain profitability.***

We have incurred substantial losses since our inception. For the years ended December 31, 2019, 2018 and 2017, our net losses were \$242.0 million, \$129.4 million and \$123.4 million, respectively. At December 31, 2019, our accumulated deficit was \$758.7 million. While our revenue has increased over time, we expect to continue to incur significant losses as we invest in our business. We incurred research and development expenses of \$141.5 million, \$63.5 million and \$46.5 million in 2019, 2018, and 2017, respectively, and selling and marketing expenses of \$122.2 million, \$74.4 million, and \$53.4 million in 2019, 2018, and 2017, respectively. We expect these losses may increase as we focus on scaling our business and operations and expanding our testing capabilities, which may also increase our operating expenses. In addition, as a result of the integration of acquired businesses, we may be subject to unforeseen or additional expenditures, costs or liabilities. Our prior losses and expected future losses have had and may continue to have an adverse effect on our stockholders' equity, working capital and stock price. Our failure to achieve and sustain profitability in the future would negatively affect our business, financial condition, results of operations and cash flows, and could cause the market price of our common stock to decline.

We began operations in January 2010 and commercially launched our initial assay in late November 2013; accordingly, we have a relatively limited operating history upon which you can evaluate our business and prospects. Our limited commercial history makes it difficult to evaluate our current business and makes predictions about our future results, prospects or viability subject to significant uncertainty. Our prospects must be considered in light of the risks and difficulties frequently encountered by companies in their early stage of development, particularly

companies in new and rapidly evolving markets such as ours. These risks include an evolving and unpredictable business model and the management of growth. To address these risks, we must, among other things, increase our customer base; implement and successfully execute our business and marketing strategy; identify, acquire and successfully integrate companies, assets or technologies in areas that are complementary to our business strategy; successfully enter into other strategic collaborations or relationships; obtain access to capital on acceptable terms and effectively utilize that capital; identify, attract, hire, retain, motivate and successfully integrate additional employees; continue to expand, automate and upgrade our laboratory, technology and data systems; obtain, maintain and expand coverage and reimbursement by healthcare payers; provide rapid test turnaround times with accurate results at low prices; provide superior customer service; and respond to competitive developments. We cannot assure you that we will be successful in addressing these risks, and the failure to do so could have a material adverse effect on our business, prospects, financial condition and results of operations.

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

As part of our business strategy, we have pursued and expect to continue to pursue acquisitions of complementary businesses or assets, as well as technology licensing arrangements. We also may pursue strategic alliances that leverage our core technology and industry experience to expand our offerings or distribution, or make investments in other companies. As an organization, we have limited experience with respect to acquisitions as well as the formation of strategic alliances and joint ventures.

In 2017, we established a leading position in family health genetic information services through the strategic acquisition of reproductive health testing capabilities, which included our acquisition of Good Start Genetics, Inc., or Good Start, a molecular diagnostics company focused on preimplantation and carrier screening for inherited disorders, and CombiMatrix Corporation, a company specializing in prenatal diagnosis, miscarriage analysis and pediatric developmental disorders. In 2017 we also acquired AltaVoice, formerly PatientCrossroads, a patient-centered data company with a global platform for collecting, curating, coordinating and delivering safeguarded data from patients and clinicians, and Ommdom, Inc. and its product, CancerGene Connect, an end-to-end platform for collecting and managing genetic family histories to deliver personalized genetic risk information.

In the second quarter of 2019, we acquired Singular Bio, Inc., to assist in lowering the costs of our NIPS offering, in July 2019, we acquired Jungla Inc. to further enhance our genetic variant interpretation and the quality of results we deliver and in November 2019, we acquired Clear Genetics, Inc. to expand our ability to scale and deliver genetic information.

With respect to our acquired businesses and any acquisitions we may make in the future, we may not be able to integrate these acquisitions successfully into our existing business, and we could assume unknown or contingent liabilities. Any acquisitions 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. Furthermore, as we experienced in the past, the loss of customers, payers, partners or suppliers following the completion of any acquisitions by us could harm our business. Changes in services, sources of revenue, and branding or rebranding initiatives may involve substantial costs and may not be favorably received by customers, resulting in an adverse impact on our financial results, financial condition and stock price. Integration of an acquired company or business also may require management's time and resources that otherwise would be available for ongoing development of our existing business. We may also need to divert cash from other uses in order to fund these integration activities and these new businesses. Ultimately, we may not realize the anticipated benefits of any acquisition, technology license, strategic alliance, joint venture or investment, or these benefits may take longer to realize than we expected.

To finance any acquisitions or investments, we may raise additional funds. If we raise funds by issuing equity securities, dilution to our stockholders could result. Any equity securities issued also may provide for rights, preferences or privileges senior to those of holders of our common stock. If we raise funds by issuing debt securities, these debt securities would have rights, preferences and privileges senior to those of holders of our common stock. The terms of debt securities issued or borrowings could impose significant restrictions on our operations. If we raise funds through collaborations and licensing arrangements, we might be required to relinquish significant rights to our technologies or products, or grant licenses on terms that are not favorable to us. If the price of our common stock is low or volatile, we may not be able to acquire other companies for stock. In addition, our stockholders may experience substantial dilution as a result of additional securities we may issue for acquisitions. Open market sales of substantial amounts of our common stock issued to stockholders of companies we acquire could also depress our share price. Alternatively, we may raise additional funds for our acquisition activities through public or private financings. Additional funds may not be available on terms that are favorable to us, or at all.

***If third-party payers, including managed care organizations, private health insurers and government health plans do not provide adequate reimbursement for our tests or we are unable to comply with their requirements for reimbursement, our commercial success could be negatively affected.***

Our ability to increase the number of billable tests and our revenue will depend on our success achieving reimbursement for our tests from third-party payers. Reimbursement by a payer may depend on a number of factors, including a payer's determination that a test is appropriate, medically necessary, cost-effective and has received prior authorization.

Since each payer makes its own decision as to whether to establish a policy or enter into a contract to cover our tests, as well as the amount it will reimburse for a test, seeking these approvals is a time-consuming and costly process. In addition, the determination by a payer to cover and the amount it will reimburse for our tests will likely be made on an indication by indication basis. To date, we have obtained policy-level reimbursement approval or contractual reimbursement for some indications for our tests from most of the large commercial third-party payers in the United States, and the Centers for Medicare and Medicaid Services, or CMS, provides reimbursement for our multi-gene tests for hereditary breast and ovarian cancer-related disorders as well as colon cancer. We believe that establishing adequate reimbursement from Medicare is an important factor in gaining adoption from healthcare providers. Our claims for reimbursement from third-party payers may be denied upon submission, and we must appeal the claims. The appeals process is time consuming and expensive, and may not result in payment. In cases where there is not a contracted rate for reimbursement, there is typically a greater coinsurance or copayment requirement from the patient, which may result in further delay or decreased likelihood of collection.

In cases where we have established reimbursement rates with third-party payers, we face additional challenges in complying with their procedural requirements for reimbursement. These requirements often vary from payer to payer, and we have needed additional time and resources to comply with them. We have also experienced, and may continue to experience, delays in or denials of coverage if we do not adequately comply with these requirements. Our third-party payers have also requested, and in the future may request, audits of the amounts paid to us. We have been required to repay certain amounts to payers as a result of such audits, and we could be adversely affected if we are required to repay other payers for alleged overpayments due to lack of compliance with their reimbursement policies. In addition, we have experienced, and may continue to experience, delays in reimbursement when we transition to being an in-network provider with a payer.

We expect to continue to focus our resources on increasing adoption of, and expanding coverage and reimbursement for, our current tests and any future tests we may develop or acquire. If we fail to expand and maintain broad adoption of, and coverage and reimbursement for, our tests, our ability to generate revenue could be harmed and our future prospects and our business could suffer.

***Our inability to raise additional capital on acceptable terms in the future may limit our ability to develop and commercialize new tests and expand our operations.***

We expect capital expenditures and operating expenses to increase over the next several years as we expand our infrastructure, commercial operations, research and development and selling and marketing activities and pursue and integrate acquisitions. We believe our existing cash and cash equivalents as of December 31, 2019 and revenue from sales of our tests will be sufficient to meet our anticipated cash requirements for our currently-planned operations for the foreseeable future. We may raise additional capital to finance operations prior to achieving profitability, or should we make additional acquisitions. We may seek to raise additional capital through equity offerings, debt financings, collaborations or licensing arrangements. Additional funding may not be available to us on acceptable terms, or at all. If we raise funds by issuing equity securities, dilution to our stockholders would result. Any equity securities issued also may provide for rights, preferences or privileges senior to those of holders of our common stock. The terms of debt securities issued or borrowings, if available, could impose significant restrictions on our operations.

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, and other operating restrictions that could adversely affect our ability to conduct our business. In addition, the issuance of additional equity securities by us, or the possibility of such issuance, may cause the market price of our common stock to decline. In the event that we enter into collaborations or licensing arrangements to raise capital, we may be required to accept unfavorable terms. These agreements may require that we relinquish or license to a third party on unfavorable terms our rights to tests we otherwise would seek to develop or commercialize ourselves, or reserve certain opportunities for future potential arrangements when we might be able to achieve more favorable terms. If we are not able to secure additional funding when needed, we may have to delay, reduce the scope of or

eliminate one or more research and development programs, selling and marketing initiatives, or potential acquisitions. In addition, we may have to work with a partner on one or more aspects of our tests or market development programs, which could lower the economic value of those tests or programs to our company.

***We face intense competition, which is likely to intensify further as existing competitors devote additional resources to, and new participants enter, the market. If we cannot compete successfully, we may be unable to increase our revenue or achieve and sustain profitability.***

With the development of next generation sequencing, the clinical genetics market is becoming increasingly competitive, and we expect this competition to intensify in the future. We face competition from a variety of sources, including:

- dozens of relatively specialized competitors focused on inherited clinical genetics and gene sequencing, such as Ambry Genetics, a subsidiary of Konica Minolta Inc.; Athena Diagnostics and Blueprint Genetics, subsidiaries of Quest Diagnostics Incorporated; Baylor-Miraca Genetics Laboratories; Centogene AG; Color Genomics, Inc.; Connective Tissue Gene Test LLC, a subsidiary of Health Network Laboratories, L.P.; Cooper Surgical, Inc.; Emory Genetics Laboratory, a subsidiary of Eurofins Scientific; GeneDx, a subsidiary of OPKO Health, Inc.; Integrated Genetics, Sequenom Inc., Correlagen, and MNG Laboratories, subsidiaries of Laboratory Corporation of America Holdings; Myriad Genetics, Inc.; Natera, Inc.; Perkin Elmer, Inc.; PreventionGenetics, LLC; Progenity, Inc.; and Sema4 Genomics;
- a few large, established general testing companies with large market share and significant channel power, such as Laboratory Corporation of America Holdings and Quest Diagnostics Incorporated;
- a large number of clinical laboratories in an academic or healthcare provider setting that perform clinical genetic testing on behalf of their affiliated institutions and often sell and market more broadly; and
- a large number of new entrants into the market for genetic information ranging from informatics and analysis pipeline developers to focused, integrated providers of genetic tools and services for health and wellness including Illumina, Inc., which is also one of our suppliers.

Hospitals, academic medical centers and eventually physician practice groups and individual clinicians may also seek to perform at their own facilities the type of genetic testing we would otherwise perform for them. In this regard, continued development of equipment, reagents, and other materials as well as databases and interpretation services may enable broader direct participation in genetic testing and analysis.

Participants in closely related markets such as clinical trial or companion diagnostic testing could converge on offerings that are competitive with the type of tests we perform. Instances where potential competitors are aligned with key suppliers or are themselves suppliers could provide such potential competitors with significant advantages.

In addition, the biotechnology and genetic testing fields are intensely competitive both in terms of service and price, and continue to undergo significant consolidation, permitting larger clinical laboratory service providers to increase cost efficiencies and service levels, resulting in more intense competition.

We believe the principal competitive factors in our market are:

- breadth and depth of content;
- quality;
- reliability;
- accessibility of results;
- turnaround time of testing results;
- price and quality of tests;
- coverage and reimbursement arrangements with third-party payers;
- convenience of testing;
- brand recognition of test provider;
- additional value-added services and informatics tools;
- client service; and
- quality of website content.

Many of our competitors and potential competitors have longer operating histories, larger customer bases, greater brand recognition and market penetration, higher margins on their tests, substantially greater financial, technological and research and development resources, selling and marketing capabilities, lobbying efforts, and more experience dealing with third-party payers. As a result, they may be able to respond more quickly to changes in customer requirements, devote greater resources to the development, promotion and sale of their tests than we do, sell their tests at prices designed to win significant levels of market share, or obtain reimbursement from more third-party payers and at higher prices than we do. We may not be able to compete effectively against these organizations. Increased competition and cost-saving initiatives on the part of governmental entities and other third-party payers are likely to result in pricing pressures, which could harm our sales, profitability or ability to gain market share. In addition, competitors may be acquired by, receive investments from or enter into other commercial relationships with larger, well-established and well-financed companies as use of next generation sequencing for clinical diagnosis and preventative care increases. Certain of our competitors may be able to secure key inputs from vendors on more favorable terms, devote greater resources to marketing and promotional campaigns, adopt more aggressive pricing policies and devote substantially more resources to website and systems development than we can. In addition, companies or governments that control access to genetic testing through umbrella contracts or regional preferences could promote our competitors or prevent us from performing certain services. In addition, some of our competitors have obtained approval or clearance for certain of their tests from the U.S. Food and Drug Administration, or FDA. If payers decide to reimburse only for tests that are FDA-approved or FDA-cleared, or if they are more likely to reimburse for such tests, we may not be able to compete effectively unless we obtain similar approval or clearance for our tests. If we are unable to compete successfully against current and future competitors, we may be unable to increase market acceptance and sales of our tests, which could prevent us from increasing our revenue or achieving profitability and could cause our stock price to decline.

***We may not be able to manage our future growth effectively, which could make it difficult to execute our business strategy.***

Our expected future growth could create a strain on our organizational, administrative and operational infrastructure, including laboratory operations, quality control, customer service, marketing and sales, and management. We may not be able to maintain the quality of or expected turnaround times for our tests, or satisfy customer demand as it grows. We will likely need to continue expanding our sales force to facilitate our growth, and we may have difficulties locating, recruiting, training and retaining sales personnel. Our ability to manage our growth effectively will require us to continue to improve our operational, financial and management controls, as well as our reporting systems and procedures. As we grow, any failure of our controls or interruption of our production facilities or systems could have a negative impact on our business and financial operations. We plan to implement new enterprise software systems in a number of areas affecting a broad range of business processes and functional areas. The time and resources required to implement these new systems is uncertain, and failure to complete these activities in a timely and efficient manner could adversely affect our operations. Future growth in our business could also make it difficult for us to maintain our corporate culture. If we are unable to manage our growth effectively, it may be difficult for us to execute our business strategy and our business could be harmed.

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

In the ordinary course of our business, we collect and store sensitive data, including protected health information, or PHI, personally identifiable information, credit card information, intellectual property and proprietary business information owned or controlled by ourselves or our customers, payers and other parties. We manage and maintain our applications and data utilizing a combination of on-site systems, managed data center systems and cloud-based data center systems. We also communicate sensitive patient data through our Invitae Family History Tool, Patient Insights Network, or PIN, and CancerGene Connect platform. In addition to storing and transmitting sensitive personal information that is subject to myriad legal protections, these applications and data encompass a wide variety of business-critical information including research and development information, commercial information, and business and financial information. We face a number of risks relative to protecting this critical information, including loss of access risk, inappropriate disclosure, inappropriate modification, and the risk of our being unable to adequately monitor and modify our controls over our critical information. Any technical problems that may arise in connection with our data and systems, including those that are hosted by third-party providers, could result in interruptions in our business and operations. These types of problems may be caused by a variety of factors, including infrastructure changes, human or software errors, viruses, security attacks, fraud, spikes in customer usage and denial of service issues. From time to time, large third-party web hosting providers have experienced outages or other problems that have resulted in their systems being offline and inaccessible. Such outages could materially impact our business and operations.

The secure processing, storage, maintenance and transmission of this critical information are vital to our operations and business strategy, and we devote significant resources to protecting such information. Although we take what we believe to be reasonable and appropriate 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 breached due to employee error, malfeasance or other disruptions. Any such breach or interruption could compromise our networks and the information stored there could be accessed by unauthorized parties, altered, publicly disclosed, lost or stolen. Any such access, disclosure or other loss of information could result in legal claims or proceedings, liability under federal or state laws that protect the privacy of personal information, such as but not limited to the Health Insurance Portability and Accountability Act of 1996, or HIPAA, the Health Information Technology for Economic and Clinical Health Act, or HITECH, state data security and data breach notification laws, and related regulatory penalties. Although we have implemented security measures and a formal, dedicated enterprise security program to prevent unauthorized access to patient data, our Invitae Family History Tool, PIN and CancerGene Connect platform are currently accessible through our online portal and/or through our mobile applications, and there is no guarantee we can protect our online portal or our mobile applications from breach. Unauthorized access, loss or dissemination could also disrupt our operations (including our ability to conduct our analyses, provide test results, bill payers or patients, process claims and appeals, provide customer assistance, conduct research and development activities, collect, process and prepare company financial information, provide information about our tests and other patient and physician education and outreach efforts through our website, and manage the administrative aspects of our business) and damage our reputation, any of which could adversely affect our business.

In addition to security risks, we also face privacy risks. While we have policies that govern our privacy practices and procedures that aim to keep our practices consistent with such policies, such procedures are not invulnerable to human error. Should we inadvertently break the privacy promises we make to patients or consumers, we could receive a complaint from an affected individual or interested privacy regulator, such as the Federal Trade Commission, or FTC, or a state Attorney General. This risk is heightened given the sensitivity of the data we collect.

Penalties for failure to comply with a requirement of HIPAA and HITECH vary significantly, and include civil monetary penalties of up to \$1.5 million per calendar year for each provision of HIPAA that is violated. A person who knowingly obtains or discloses individually identifiable health information in violation of HIPAA may face a criminal penalty of up to \$50,000 and up to one-year imprisonment. The criminal penalties increase if the wrongful conduct involves false pretenses or the intent to sell, transfer or use identifiable health information for commercial advantage, personal gain or malicious harm. Penalties for unfair or deceptive acts or practices under the FTC Act or state Unfair and Deceptive Acts and Practices, or UDAP, statutes may also vary significantly.

There has been unprecedented activity in the development of data protection regulation around the world. As a result, the interpretation and application of consumer, health-related and data protection laws in the United States, Europe and elsewhere are often uncertain, contradictory and in flux. The European Union's General Data Protection Regulation, or GDPR, took effect in May 2018. The GDPR applies to any business, regardless of its location, that provides goods or services to residents in the European Union. The GDPR imposes strict requirements on controllers and processors of personal data, including special protections for "sensitive information" which includes health and genetic information of data subjects residing in the European Union. The GDPR also grants individuals various rights in relation to their personal data including the right to access, rectification, objection to processing and deletion, and provides an individual with an express right to seek legal remedies if the individual believes his or her rights have been violated. Failure to comply with the requirements of the GDPR and the related national data protection laws of the member states of the European Union, which may deviate slightly from the GDPR, may result in significant fines.

Additionally, the implementation of GDPR has led other jurisdictions to either amend or propose legislation to amend their existing data privacy and cybersecurity laws to resemble the requirements of GDPR. For example, on June 28, 2018, California adopted the California Consumer Privacy Act of 2018, or CCPA, and amended the law in September 2018 to exempt all PHI collected by certain parties subject to HIPAA. The effective date of the CCPA is January 1, 2020. On October 10, 2019, the California Attorney General issued draft regulations for the CCPA. The regulations are still subject to change but are expected to be finalized by July 1, 2020. The Attorney General has stated that even though the regulations will not be finalized before the effective date of the CCPA, the Attorney General may still bring enforcement actions for CCPA violations occurring after January 1, 2020. The CCPA gives California residents expanded rights to access and delete their personal information, opt out of certain personal information sharing, and receive detailed information about how their personal information is used. The CCPA provides for civil penalties for violations, as well as a private right of action for data breaches that is expected to increase data breach litigation.

It is possible the GDPR, CCPA and other data protection laws may be interpreted and applied in a manner that is inconsistent with our practices. If so, this could result in government-imposed fines or orders requiring that we change our practices, which could adversely affect our business. In addition, these privacy regulations may differ from country to country and state to state, and may vary based on whether testing is performed in the United States or in the local country. Complying with these various laws and regulations could cause us to incur substantial costs or require us to change our business practices and compliance procedures in a manner adverse to our business. We can provide no assurance that we are or will remain in compliance with diverse privacy and security requirements in all of the jurisdictions in which we do business. Failure to comply with privacy and security requirements could result in civil or criminal penalties, which could have a material adverse effect on our business.

***We rely on highly skilled personnel in a broad array of disciplines and, if we are unable to hire, retain or motivate these individuals, or maintain our corporate culture, we may not be able to maintain the quality of our services or grow effectively.***

Our performance, including our research and development programs and laboratory operations, largely depend on our continuing ability to identify, hire, develop, motivate and retain highly skilled personnel for all areas of our organization, including software developers, geneticists, biostatisticians, certified laboratory scientists and other scientific and technical personnel to process and interpret our genetic tests. In addition, we expect the need to continue to expand our sales force with qualified and experienced personnel. Competition in our industry for qualified employees is intense, and we may not be able to attract or retain qualified personnel in the future due to the competition for qualified personnel among life science and technology businesses as well as universities and public and private research institutions, particularly in the San Francisco Bay Area. In addition, our compensation arrangements, such as our equity award programs, may not always be successful in attracting new employees and retaining and motivating our existing employees. 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 scale our business, support our research and development efforts and our clinical laboratory. We believe that our corporate culture fosters innovation, creativity and teamwork. However, as our organization grows, we may find it increasingly difficult to maintain the beneficial aspects of our corporate culture. This could negatively impact our ability to retain and attract employees and our future success.

***We need to scale our infrastructure in advance of demand for our tests, and our failure to generate sufficient demand for our tests would have a negative impact on our business and our ability to attain profitability.***

Our success depends in large part on our ability to extend our market position, to provide customers with high-quality test reports quickly and at a lower price than our competitors, and to achieve sufficient test volume to realize economies of scale. In order to execute our business model, we intend to continue to invest heavily in order to significantly scale our infrastructure, including our testing capacity and information systems, expand our commercial operations, customer service, billing and systems processes and enhance our internal quality assurance program. We expect that much of this growth will be in advance of demand for our tests. Our current and future expense levels are to a large extent fixed and are largely based on our investment plans and our estimates of future revenue. Because the timing and amount of revenue from our tests is difficult to forecast, when revenue does not meet our expectations, we may not be able to adjust our spending promptly or reduce our spending to levels commensurate with our revenue. Even if we are able to successfully scale our infrastructure and operations, we cannot assure you that demand for our tests will increase at levels consistent with the growth of our infrastructure. If we fail to generate demand commensurate with this growth or if we fail to scale our infrastructure sufficiently in advance of demand to successfully meet such demand, our business, prospects, financial condition and results of operations could be adversely affected.

***If we are not able to continue to generate substantial demand of our tests, our commercial success will be negatively affected.***

Our business model assumes that we will be able to generate significant test volume, and we may not succeed in continuing to drive adoption of our tests to achieve sufficient volumes. Inasmuch as detailed genetic data from broad-based testing panels such as our tests have only recently become available at relatively affordable prices, the continued pace and degree of clinical acceptance of the utility of such testing is uncertain. Specifically, it is uncertain how much genetic data will be accepted as necessary or useful, as well as how detailed that data should be, particularly since medical practitioners may have become accustomed to genetic testing that is specific to one or a few genes. Given the substantial amount of additional information available from a broad-based testing panel such as ours, there may be distrust as to the reliability of such information when compared with more limited and focused genetic tests. To generate further demand for our tests, we will need to continue to make clinicians aware of the benefits of our tests, including the price, the breadth of our testing options, and the benefits of having



additional genetic data available from which to make treatment decisions. Because broad-based testing panels are relatively new, it may be more difficult or take more time for us to expand clinical adoption beyond our current customer base. In addition, clinicians in other areas of medicine may not adopt genetic testing for hereditary disease as readily as it has been adopted in hereditary cancer and our efforts to sell our tests to clinicians outside of oncology may not be successful. A lack of or delay in clinical acceptance of broad-based panels such as our tests would negatively impact sales and market acceptance of our tests and limit our revenue growth and potential profitability. Genetic testing is expensive and many potential customers may be sensitive to pricing. In addition, potential customers may not adopt our tests if adequate reimbursement is not available, or if we are not able to maintain low prices relative to our competitors. Also, we have recently introduced our direct channel, in which we facilitate the ordering of our genetic tests by consumers through an online network of physicians. Since we have limited experience directly marketing to patients, we may not be successful in increasing demand for our tests through this new channel. Patient-initiated testing may also be perceived negatively by our existing customer base of clinicians and genetic counselors, in which case our core business could be harmed.

If we are not able to generate demand for our tests at sufficient volume, or if it takes significantly more time to generate this demand than we anticipate, our business, prospects, financial condition and results of operations could be materially harmed.

***Our success will depend on our ability to use rapidly changing genetic data to interpret test results accurately and consistently, and our failure to do so would have an adverse effect on our operating results and business, harm our reputation and could result in substantial liabilities that exceed our resources.***

Our success depends on our ability to provide reliable, high-quality tests that incorporate rapidly evolving information about the role of genes and gene variants in disease and clinically relevant outcomes associated with those variants. Errors, such as failure to detect genomic variants with high accuracy, or mistakes, such as failure to identify, or incompletely or incorrectly identifying, gene variants or their significance, could have a significant adverse impact on our business.

Hundreds of genes can be implicated in some disorders, and overlapping networks of genes and symptoms can be implicated in multiple conditions. As a result, a substantial amount of judgment is required in order to interpret testing results for an individual patient and to develop an appropriate patient report. We classify variants in accordance with published guidelines as benign, likely benign, variants of uncertain significance, likely pathogenic or pathogenic, and these guidelines are subject to change. In addition, it is our practice to offer support to clinicians and geneticists ordering our tests regarding which genes or panels to order as well as interpretation of genetic variants. We also rely on clinicians to interpret what we report and to incorporate specific information about an individual patient into the physician's treatment decision.

The marketing, sale and use of our genetic tests could subject us to liability for errors in, misunderstandings of, or inappropriate reliance on, information we provide to clinicians, geneticists or patients, and lead to claims against us if someone were to allege that a test failed to perform as it was designed, if we failed to correctly interpret the test results, if we failed to update the test results due to a reclassification of the variants according to new published guidelines, or if the ordering physician were to misinterpret test results or improperly rely on them when making a clinical decision. In addition, our entry into the reproductive health testing market exposes us to increased liability. A product liability or professional liability claim could result in substantial damages and be costly and time-consuming for us to defend. Although we maintain liability insurance, including for errors and omissions, we cannot assure you that such 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 any such claims. Any liability claim, including an 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 liability lawsuit could cause injury to our reputation or cause us to suspend sales of our tests. The occurrence of any of these events could have an adverse effect on our reputation and results of operations.

***Our industry is subject to rapidly changing technology and new and increasing amounts of scientific data related to genes and genetic variants and their role in disease. Our failure to develop tests to keep pace with these changes could make us obsolete.***

In recent years, there have been numerous advances in methods used to analyze very large amounts of genomic information and the role of genetics and gene variants in disease and treatment therapies. Our industry has and will continue to be characterized by rapid technological change, increasingly larger amounts of data, frequent new testing service introductions and evolving industry standards, all of which could make our tests obsolete. Our future success will also depend on our ability to keep pace with the evolving needs of our customers on a timely and cost-effective basis and to pursue new market opportunities that develop as a result of technological

and scientific advances. Our tests could become obsolete and our business adversely affected unless we continually update our offerings to reflect new scientific knowledge about genes and genetic variations and their role in diseases and treatment therapies.

***Our success will depend in part on our ability to generate sales using our internal sales team and through alternative marketing strategies.***

We may not be able to market or sell our current tests and any future tests we may develop or acquire effectively enough to drive demand sufficient to support our planned growth. We currently sell our tests primarily through our internal sales force. Historically, our sales efforts have been focused primarily on hereditary cancer and more recently on reproductive health. Our efforts to sell our tests to clinicians and patients outside of oncology may not be successful, or may be difficult to do successfully without significant additional selling and marketing efforts and expense. We significantly increased the size of our sales force in 2017, 2018, and 2019. Our future sales will also depend in large part on our ability to develop and substantially expand awareness of our company and our tests through alternative strategies including through education of key opinion leaders, through social media-related and online outreach, education and marketing efforts, and through focused channel partner strategies designed to drive demand for our tests. We also plan to continue to increase our consumer advertising in connection with our introduction of our direct channel to consumers, which could be costly. We have limited experience implementing these types of marketing efforts. We may not be able to drive sufficient levels of revenue using these sales and marketing methods and strategies necessary to support our planned growth, and our failure to do so could limit our revenue and potential profitability.

Outside the United States we are increasing our direct sales personnel; however, we have limited experience selling and operating internationally. We also use a limited number of distributors to assist internationally with sales, logistics, education and customer support. Sales practices utilized by our distributors that are locally acceptable may not comply with sales practices standards required under U.S. laws that apply to us, which could create additional compliance risk. If our sales and marketing efforts are not successful outside the United States, we may not achieve significant market acceptance for our tests outside the United States, which could adversely impact our business.

***Impairment in the value of our goodwill or other intangible assets could have a material adverse effect on our operating results and financial condition.***

We record goodwill and intangible assets at fair value upon the acquisition of a business. Goodwill represents the excess of amounts paid for acquiring businesses over the fair value of the net assets acquired. Goodwill and indefinite-lived intangible assets are evaluated for impairment annually, or more frequently if conditions warrant, by comparing the carrying value of a reporting unit to its estimated fair value. Intangible assets with definite lives are reviewed for impairment when events or circumstances indicate that their carrying value may not be recoverable. Declines in operating results, divestitures, sustained market declines and other factors that impact the fair value of a reporting unit could result in an impairment of goodwill or intangible assets and, in turn, a charge to net income. Any such charges could have a material adverse effect on our results of operations or financial condition.

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

We rely on a limited number of suppliers, or, in some cases, sole suppliers, including Illumina, Inc., Integrated DNA Technologies Incorporated, Qiagen N.V., Roche Holdings Ltd. and Twist Bioscience Corporation for certain laboratory substances used in the chemical reactions incorporated into our processes, which we refer to as reagents, as well as sequencers and other equipment and materials which we use in our laboratory operations. We do not have short- or long-term agreements with most of our suppliers, and our suppliers could cease supplying these materials and equipment at any time, or fail to provide us with sufficient quantities of materials or materials that meet our specifications. Our laboratory operations could be interrupted if we encounter delays or difficulties in securing these reagents, sequencers or other equipment or materials, and if we cannot obtain an acceptable substitute. Any such interruption could significantly affect our business, financial condition, results of operations and reputation. We rely on Illumina as the sole supplier of next generation sequencers and associated reagents and as the sole provider of maintenance and repair services for these sequencers. Any disruption in Illumina's operations could impact our supply chain and laboratory operations as well as our ability to conduct our tests, and it could take a substantial amount of time to integrate replacement equipment into our laboratory operations. We also currently rely on a third party to perform non-invasive prenatal screening, or NIPS, testing on our behalf. In the event of any

disruption or termination of these services, it may be difficult to find a replacement NIPS offering, which could harm our business, financial condition, results of operation and reputation.

We believe that there are only a few other manufacturers that are currently capable of supplying and servicing the equipment necessary for our laboratory operations, including sequencers and various associated reagents. The use of equipment or materials provided by these replacement suppliers would require us to alter our laboratory operations. Transitioning to a new supplier would be time consuming and expensive, may result in interruptions in our laboratory operations, could affect the performance specifications of our laboratory operations or could require that we revalidate our tests. We cannot assure you that we will be able to secure alternative equipment, reagents and other materials, and bring such equipment, reagents and materials on line and revalidate them without experiencing interruptions in our workflow. In the case of an alternative supplier for Illumina, we cannot assure you that replacement sequencers and associated reagents will be available or will meet our quality control and performance requirements for our laboratory operations. If we encounter delays or difficulties in securing, reconfiguring or revalidating the equipment and reagents we require for our tests, our business, financial condition, results of operations and reputation could be adversely affected.

***If our laboratories in California become inoperable due to disasters, health epidemics or for any other reasons, we will be unable to perform our tests and our business will be harmed.***

We perform all of our tests at our production facilities in San Francisco and Irvine, California. Our laboratories and the equipment we use to perform our tests would be costly to replace and could require substantial lead time to replace and qualify for use. Our laboratories may be harmed or rendered inoperable by natural or man-made disasters, including earthquakes, flooding, fire and power outages, or by health epidemics, such as the recent coronavirus, which may render it difficult or impossible for us to perform our tests for some period of time. This risk of natural disaster is especially high for us since we perform the substantial majority of our tests at our San Francisco laboratory, which is located in an active seismic region, and we do not have a redundant facility to perform the same tests in the event our San Francisco laboratory is inoperable. The inability to perform our tests or the backlog that could develop if our laboratories are inoperable for even a short period of time may result in the loss of customers or harm our reputation. 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.

***We face risks related to health epidemics which could adversely affect our business and results of operations.***

Our business could be materially adversely affected by the effects of a widespread outbreak of contagious disease, including the recent outbreak of respiratory illness caused by a novel coronavirus first identified in Wuhan, Hubei Province, China. These effects could include disruptions or restrictions on our employees' ability to travel, as well as temporary closures of our laboratories or the facilities of our suppliers or customers, which could impact our test volume and results of operations. In addition, a significant outbreak of contagious diseases in the human population could result in a widespread health crisis that could adversely affect the economies and financial markets of many countries, resulting in an economic downturn that could affect demand for our tests and likely impact our results of operations.

***The loss of any member or change in structure of our senior management team could adversely affect our business.***

Our success depends in large part upon the skills, experience and performance of members of our executive management team and others in key leadership positions. The efforts of these persons will be critical to us as we continue to develop our technologies and test processes and focus on scaling our business. If we were to lose one or more key executives, we may experience difficulties in competing effectively, developing our technologies and implementing our business strategy. All of our executives and employees are at-will, which means that either we or the executive or employee may terminate their employment at any time. We do not carry key man insurance for any of our executives or employees. In addition, we do not have a long-term retention agreement in place with our president and chief executive officer.

***Development of new tests is a complex process, and we may be unable to commercialize new tests on a timely basis, or at all.***

We cannot assure you that we will be able to develop and commercialize new tests on a timely basis. Before we can commercialize any new tests, we will need to expend significant funds in order to:

- conduct research and development;

- further develop and scale our laboratory processes; and
- further develop and scale our infrastructure to be able to analyze increasingly larger and more diverse amounts of data.

Our testing service development process involves risk, and development efforts may fail for many reasons, including:

- failure of any test to perform as expected;
- lack of validation or reference data; or
- failure to demonstrate utility of a test.

As we develop tests, we will have to make significant investments in development, marketing and selling resources. In addition, competitors may develop and commercialize competing tests faster than we are able to do so.

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

We depend on information technology and telecommunications systems for significant elements of our operations, including our laboratory information management system, our bioinformatics analytical software systems, our database of information relating to genetic variations and their role in disease process and drug metabolism, our clinical report optimization systems, our customer-facing web-based software, our customer reporting, and our Invitae Family History Tool, PIN, and CancerGene Connect platform. We have installed, and expect to expand, a number of enterprise software systems that affect a broad range of business processes and functional areas, including for example, systems handling human resources, financial controls and reporting, customer relationship management, regulatory compliance and other infrastructure operations. In addition, we intend to extend the capabilities of both our preventative and detective security controls by augmenting the monitoring and alerting functions, the network design, and the automatic countermeasure operations of our technical systems. These information technology and telecommunications systems support a variety of functions, including laboratory operations, test validation, sample tracking, quality control, customer service support, billing and reimbursement, research and development activities, scientific and medical curation, and general administrative activities, including financial reporting.

Information technology and telecommunications systems are vulnerable to damage from a variety of sources, including telecommunications or network failures, malicious human acts and natural disasters. Moreover, despite network security and back-up measures, some of our servers are potentially vulnerable to physical or electronic break-ins, computer viruses and similar disruptive problems. Despite the precautionary measures we have taken to prevent unanticipated problems that could affect our information technology and telecommunications systems, failures or significant downtime of our information technology or telecommunications systems or those used by our third-party service providers could prevent us from conducting tests, preparing and providing reports to clinicians, billing payers, processing reimbursement appeals, handling physician or patient inquiries, conducting research and development activities, and managing the administrative and financial aspects of our business. Any disruption or loss of information technology or telecommunications systems on which critical aspects of our operations depend could have an adverse effect on our business and results of operations.

Technical problems have arisen, and may arise in the future, in connection with our data and systems, including those that are hosted by third-party providers, which have in the past and may in the future result in interruptions in our business and operations. These types of problems may be caused by a variety of factors, including infrastructure changes, human or software errors, viruses, security attacks, fraud, spikes in customer usage and denial of service issues. From time to time, large third-party web hosting providers have experienced outages or other problems that have resulted in their systems being offline and inaccessible. Such outages could materially impact our business and operations.

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

Genetic testing has raised ethical, legal and social issues regarding privacy and the appropriate uses of the resulting information. Governmental authorities could, for social or other purposes, limit or regulate the use of genetic information or genetic testing or prohibit testing for genetic predisposition to certain conditions, particularly for those that have no known cure. Similarly, these concerns may lead patients to refuse to use, or clinicians to be reluctant to order, genomic tests even if permissible. These and other ethical, legal and social concerns may limit

market acceptance of our tests or reduce the potential markets for our tests, either of which could have an adverse effect on our business, financial condition or results of operations.

***Our international business exposes us to business, regulatory, political, operational, financial and economic risks associated with doing business outside of the United States.***

Doing business internationally involves a number of risks, including:

- multiple, conflicting and changing laws and regulations such as privacy regulations, tax laws, export and import restrictions, employment laws, regulatory requirements, and other governmental approvals, permits and licenses;
- failure by us or our distributors to obtain regulatory approvals for the use of our tests in various countries;
- complexities and difficulties in obtaining protection and enforcing our intellectual property;
- difficulties in staffing and managing foreign operations;
- complexities associated with managing multiple payer reimbursement regimes, government payers or patient self-pay systems;
- logistics and regulations associated with shipping samples, including infrastructure conditions, customs and transportation delays;
- limits on our ability to penetrate international markets if we do not to conduct our tests locally;
- natural disasters, including the recent and ongoing outbreak and spreading of Coronavirus, political and economic instability, including wars, terrorism and political unrest, outbreak of disease, boycotts, curtailment of trade and other business restrictions; and
- regulatory and compliance risks that relate to maintaining accurate information and control over activities that may fall within the purview of the U.S. Foreign Corrupt Practices Act, or FCPA, its books and records provisions, or its anti-bribery provisions.

Any of these factors could significantly harm our international operations and, consequently, our revenue and results of operations.

In addition, applicable export or import laws and regulations such as prohibitions on the export of samples imposed by countries outside of the United States, or international privacy or data restrictions that are different or more stringent than those of the United States, may require that we build additional laboratories or engage in joint ventures or other business partnerships in order to offer our tests internationally in the future. Any such restrictions would impair our ability to offer our tests in such countries and could have an adverse effect on our business, financial condition and results of operations.

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

At December 31, 2019, our total gross deferred tax assets were \$204.5 million. Due to our lack of earnings history and uncertainties surrounding our ability to generate future taxable income, the net deferred tax assets have been fully offset by a valuation allowance. The deferred tax assets were primarily comprised of federal and state tax net operating losses and tax credit carryforwards. Furthermore, under Section 382 of the Internal Revenue Code of 1986, as amended, or the Internal Revenue Code, if a corporation undergoes an “ownership change,” the corporation’s ability to use its pre-change net operating loss carryforwards, or NOLs, and other pre-change tax attributes (such as research tax credits) to offset its future taxable income may be limited. In general, an “ownership change” occurs if there is a cumulative change in our ownership by “5% shareholders” that exceeds 50 percentage points over a rolling three-year period. Our existing NOLs and tax credit carryovers may be subject to limitations arising from previous ownership changes, and if we undergo one or more ownership changes in connection with completed acquisitions, or other future transactions in our stock, our ability to utilize NOLs and tax credit carryovers could be further limited by Section 382 of the Internal Revenue Code. As a result, if we earn net taxable income, our ability to use our pre-change net operating loss and tax credit carryforwards to offset U.S. federal taxable income may be subject to limitations, which could potentially result in increased future tax liability to us. The annual limitation may result in the expiration of certain net operating loss and tax credit carryforwards before their utilization. In addition, the Tax Cuts and Jobs Act limits the deduction for NOLs to 80% of current year taxable income and eliminates NOL carrybacks. Also, at the state level, there may be periods during which the use of NOLs is suspended or otherwise limited, which could accelerate or permanently increase state taxes owed.

## **Risks related to government regulation**

***If the FDA regulates our tests as medical devices, we could incur substantial costs and our business, financial condition and results of operations could be adversely affected.***

We provide our tests as laboratory-developed tests, or LDTs. CMS and certain state agencies regulate the performance of LDTs (as authorized by the Clinical Laboratory Improvement Amendments of 1988, or CLIA, and state law, respectively).

Historically, the FDA has exercised enforcement discretion with respect to most LDTs and has not required laboratories that furnish LDTs to comply with the agency's requirements for medical devices (e.g., establishment registration, device listing, quality systems regulations, premarket clearance or premarket approval, and post-market controls). In recent years, however, the FDA has stated it intends to end its policy of general enforcement discretion and regulate certain LDTs as medical devices. To this end, on October 3, 2014, the FDA issued two draft guidance documents, entitled "Framework for Regulatory Oversight of Laboratory Developed Tests (LDTs)" and "FDA Notification and Medical Device Reporting for Laboratory Developed Tests (LDTs)," respectively, that set forth a proposed risk-based regulatory framework that would apply varying levels of FDA oversight to LDTs. Subsequently, on January 13, 2017, the FDA published a "discussion paper" in which it outlined a substantially revised "possible approach" to the oversight of LDTs. In December 2018, a draft bill titled the "Verifying Accurate Leading-edge IVCT Development Act of 2018," or VALID Act, was released for discussion. The draft bill proposes a risk-based approach to regulate LDTs and creates a new in vitro clinical test, or IVCT, category of regulated products, which includes LDTs, and a regulatory structure under the FDA. As proposed, the draft bill grandfathers many existing tests from the proposed premarket approval, quality systems, and labeling requirements, respectively, but would require such tests to comply with other regulatory requirements (e.g., registration and notification, adverse event reporting). We cannot predict if this draft bill will be enacted in its current (or any other) form and cannot quantify the effect of this draft bill on our business.

Legislative proposals addressing the FDA's oversight of LDTs have been introduced in previous Congresses, and we expect that new legislative proposals will be introduced from time-to-time. The likelihood that Congress will pass such legislation and the extent to which such legislation may affect the FDA's plans to regulate certain LDTs as medical devices is difficult to predict at this time.

If the FDA ultimately regulates certain LDTs (either as medical devices or as part of a new stand-alone regulatory category for IVCTs), whether via individualized enforcement action, or more generally, as outlined in final guidance or final regulation, or as instructed by Congress, our tests may be subject to certain additional regulatory requirements. Complying with the FDA's requirements can be expensive, time-consuming and subject us to significant or unanticipated delays. Insofar as we may be required to obtain premarket clearance or approval to perform or continue performing an LDT, we cannot assure you that we will be able to obtain such authorization. Even if we obtain regulatory clearance or approval where required, such authorization may not be for the intended uses that we believe are commercially attractive or are critical to the commercial success of our tests. As a result, the application of the FDA's requirements to our tests could materially and adversely affect our business, financial condition and results of operations.

Failure to comply with applicable FDA regulatory requirements may trigger a range of enforcement actions by the FDA including warning letters, civil monetary penalties, injunctions, criminal prosecution, recall or seizure, operating restrictions, partial suspension or total shutdown of operations, and denial of or challenges to applications for clearance or approval, as well as significant adverse publicity.

In addition, in November 2013, the FDA issued final guidance regarding the distribution of products labeled for research use only. Certain of the reagents and other products we use in our tests are labeled as research use only products. Certain of our suppliers may cease selling research use only products to us and any failure to obtain an acceptable substitute could significantly and adversely affect our business, financial condition and results of operations.

***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, 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 establish specific standards with respect to personnel qualifications, facility administration, proficiency testing, quality control, quality assurance and inspections. CLIA certification is also required in order for us to be eligible to bill state and federal healthcare programs, as well as many private third-party payers, for our tests. We have current CLIA certifications to conduct our tests at our laboratories in San Francisco and Irvine,

California. 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 licenses to conduct testing in California. California laws establish standards for day-to-day operation of our clinical reference laboratories in San Francisco and Irvine, including the training and skills required of personnel and quality control. We also maintain out-of-state laboratory licenses to conduct testing on specimens from Maryland, New York, Pennsylvania and Rhode Island.

In addition to having laboratory licenses in New York, our clinical reference laboratories are approved on test-specific bases by the New York State Department of Health, or NYDOH. Other states may adopt similar licensure requirements in the future, which may require us to modify, delay or stop our operations in such jurisdictions. We may also be subject to regulation in foreign jurisdictions as we seek to expand international utilization of our tests or such jurisdictions adopt new licensure requirements, which may require review of our tests in order to offer them or may have other limitations such as restrictions on the transport of samples necessary for us to perform our tests that may limit our ability to make our tests available outside of the United States. Complying with licensure requirements in new jurisdictions may be expensive, time-consuming, and subject us to significant and unanticipated delays.

Failure to comply with applicable clinical laboratory licensure requirements may result in a range of enforcement actions, including license suspension, limitation, or revocation, directed plan of action, onsite monitoring, civil monetary penalties, criminal sanctions, and cancellation of the laboratory's approval to receive Medicare and Medicaid payment for its services, as well as significant adverse publicity. Any sanction imposed under CLIA, its implementing regulations, or state or foreign laws or regulations governing clinical laboratory licensure, or our failure to renew our CLIA certificate, a state or foreign license, or accreditation, could have a material adverse effect on our business, financial condition and results of operations. Even if we were able to bring our laboratory back into compliance, we could incur significant expenses and potentially lose revenue in doing so.

The College of American Pathologists, or CAP, maintains a clinical laboratory accreditation program. CAP asserts that its program is "designed to go well beyond regulatory compliance" and helps laboratories achieve the highest standards of excellence to positively impact patient care. While not required to operate a CLIA-certified laboratory, many private insurers require CAP accreditation as a condition to contracting with clinical laboratories to cover their tests. In addition, some countries outside the United States require CAP accreditation as a condition to permitting clinical laboratories to test samples taken from their citizens. We have CAP accreditations for our laboratories. Failure to maintain CAP accreditation could have a material adverse effect on the sales of our tests and the results of our operations.

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

Our operations are subject to other extensive federal, state, local and foreign laws and regulations, all of which are subject to change. These laws and regulations currently include, among others:

- HIPAA, which establishes comprehensive federal standards with respect to the privacy and security of protected health information and requirements for the use of certain standardized electronic transactions;
- amendments to HIPAA under HITECH, which strengthen and expand HIPAA privacy and security compliance requirements, increase penalties for violators and expand vicarious liability, extend enforcement authority to state attorneys general, and impose requirements for breach notification;
- the federal Anti-Kickback Statute, which prohibits knowingly and willfully offering, paying, soliciting or receiving remuneration, directly or indirectly, overtly or covertly, in cash or in kind, to induce or in return for the referral of an individual, for the furnishing of or arrangement for the furnishing of any item or service for which payment may be made in whole or in part by a federal healthcare program, or the purchasing, leasing, ordering, arranging for, or recommend purchasing, leasing or ordering, any good, facility, item or service for which payment may be made, in whole or in part, under a federal healthcare program;
- EKRA, which prohibits payments for referrals to recovery homes, clinical treatment facilities, and laboratories and reaches beyond federal health care programs, to include private insurance;
- the federal physician self-referral law, known as the Stark Law, which prohibits a physician from making a referral to an entity 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 unless an exception applies, and prohibits an entity from billing for designated health services furnished pursuant to a prohibited referral;

- the federal false claims law, 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 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 HIPAA fraud and abuse provisions, which create new federal criminal statutes that prohibit, among other things, defrauding health care benefit programs, willfully obstructing a criminal investigation of a healthcare offense and falsifying or concealing a material fact or making any materially false statements in connection with the payment for healthcare benefits, items or services;
- other federal and state fraud and abuse laws, such as anti-kickback laws, prohibitions on self-referral, fee-splitting restrictions, insurance fraud laws, anti-markup laws, prohibitions on the provision of tests at no or discounted cost to induce physician or patient adoption, and false claims acts, 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;
- state laws that prohibit other specified practices, such as billing clinicians for testing that they order; waiving coinsurance, copayments, deductibles and other amounts owed by patients; billing a state Medicaid program at a price that is higher than what is charged to one or more other payers; and
- similar foreign laws and regulations that apply to us in the countries in which we operate or may operate in the future.

We have adopted policies and procedures designed to comply with these laws and regulations. In the ordinary course of our business, we conduct internal reviews of our compliance with these laws. Our compliance may also be subject to governmental review. The growth of our business and our expansion outside of the United States may increase the potential of violating these laws 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. 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 any applicable penalty associated with the violation, including administrative, civil and criminal penalties, damages, fines, individual imprisonment, exclusion from participation in Federal healthcare programs, refunding of payments received by us, and curtailment or cessation of our operations. Any of the foregoing consequences could seriously harm our business and our financial results.

***Healthcare policy changes, including legislation reforming the U.S. healthcare system, may have a material adverse effect on our financial condition, results of operations and cash flows.***

In March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, collectively referred to as the Affordable Care Act, was enacted in the United States, which made a number of substantial changes in the way healthcare is financed by both governmental and private insurers. Among other things, the Affordable Care Act required each medical device manufacturer to pay a sales tax equal to 2.3% of the price for which such manufacturer sells its medical devices, and applied to sales of taxable medical devices from January 1, 2013 through December 31, 2015. The excise tax was suspended from January 1, 2016 to December 31, 2019 and was repealed as of January 1, 2020 by the Further Consolidated Appropriations Act of 2020. Policy changes or implementation of new health care legislation could result in significant changes to health care systems. In the United States, this could include potential modification or repeal of all or parts of the Affordable Care Act.

In April 2014, Congress passed the Protecting Access to Medicare Act of 2014, or PAMA, which included substantial changes to the way in which clinical laboratory services are paid under Medicare. Under PAMA (as amended by the Further Consolidated Appropriations Act, 2020) and its implementing regulations, clinical laboratories must report to CMS private payer rates beginning in 2017, and then in 2021 and every three years thereafter for clinical diagnostic laboratory tests that are not advanced diagnostic laboratory tests and every year for advanced diagnostic laboratory tests.



We do not believe that our tests meet the definition of advanced diagnostic laboratory tests, but in the event that we seek designation for one or more of our tests as an advanced diagnostic laboratory test and the tests are determined by CMS to meet these criteria or new criteria developed by CMS, we would be required to report private payer data for those tests annually. Otherwise, we will be required to report private payer rates for our tests on an every three years basis starting in 2021. Laboratories that fail to timely report the required payment information may be subject to substantial civil money penalties.

As set forth in the PAMA final rule, for tests furnished on or after January 1, 2018, Medicare payments for clinical diagnostic laboratory tests are paid based upon these reported private payer rates. For clinical diagnostic laboratory tests that are assigned a new or substantially revised code, initial payment rates for clinical diagnostic laboratory tests that are not advanced diagnostic laboratory tests will be assigned by the cross-walk or gap-fill methodology. Initial payment rates for new advanced diagnostic laboratory tests will be based on the actual list charge for the laboratory test. The payment rates calculated under PAMA went into effect starting January 1, 2018. Where applicable, 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 2021 through 2023 (with a second round of private payer rate reporting in 2021 to establish rates for 2022 through 2024).

PAMA also authorized the adoption of new, temporary billing codes and/or unique test identifiers for FDA-cleared or approved tests as well as advanced diagnostic laboratory tests. The CPT® Editorial Panel approved a proposal to create a new section of billing codes to facilitate implementation of this section of PAMA, but these codes would apply to our tests only if we apply for such codes.

In March 2018, CMS published a national coverage determination, or NCD, for next generation sequencing, or NGS tests for somatic (acquired) cancer testing. CMS subsequently updated this NCD in January 2020 to address coverage for NGS tests for germline (inherited) cancer testing and to clarify certain aspects of Medicare's coverage of NGS for somatic cancer testing. For somatic cancer testing, the updated NCD establishes full coverage for FDA-approved or FDA-cleared NGS-based companion diagnostic assays that report results using report templates that specify treatment options when offered for their FDA-approved or FDA-cleared use(s), ordered by the patient's treating physician for Medicare beneficiaries with advanced cancer (recurrent, relapsed, refractory, metastatic, or advanced stage III or IV cancer) who have not have previously been tested with the same test using NGS for the same cancer genetic content, and have decided to seek further cancer treatment. The NCD also gives MACs the authority to establish local coverage for NGS-based somatic cancer assays that are not FDA-approved or FDA-cleared companion diagnostics when offered to patients meeting the above-referenced criteria. It appears that NGS-based somatic cancer tests provided for patients with cancer that do not meet the above-referenced criteria - e.g., patients with earlier stage cancers - are nationally non-covered under the NCD.

Effective January 27, 2020, the NCD also establishes full coverage for FDA-approved or FDA-cleared NGS-based germline tests that report results using report templates that specify treatment options when ordered by the patient's treating physician for patients with ovarian or breast cancer, a clinical indication for germline testing for hereditary breast or ovarian cancer, and a risk factor for germline breast or ovarian cancer, provided the patient has not previously been tested with the same germline test using NGS for the same germline genetic content. The NCD also gives MACs the authority to establish local coverage for NGS-based germline tests for ovarian or breast cancer that are not FDA-approved or FDA-cleared, as well as for NGS-based tests for any other cancer diagnosis (regardless of the test's FDA regulatory status) when offered to patients meeting the above-referenced criteria for germline testing. Since we already have local coverage for our germline tests for ovarian and breast cancer, we believe that the NCD will not have a material impact on which of our tests will be reimbursable by CMS for Medicare patients.

We cannot predict whether future healthcare initiatives will be implemented at the federal or state level, or how any future legislation or regulation may affect us. For instance, the payment reductions imposed by the Affordable Care Act and the expansion of the federal and state governments' role in the U.S. healthcare industry as well as changes to the reimbursement amounts paid by payers for our tests and future tests or our medical procedure volumes may reduce our profits and have a materially adverse effect on our business, financial condition, results of operations and cash flows. Notably, Congress enacted legislation in 2017 that eliminated the Affordable Care Act's "individual mandate" beginning in 2019, which may significantly impact the number of covered lives participating in exchange plans. Moreover, Congress has proposed on several occasions to impose a 20% coinsurance on patients for clinical laboratory tests reimbursed under the clinical laboratory fee schedule, which would increase our billing and collecting costs and decrease our revenue.

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

Our activities currently require the use of hazardous chemicals and biological material. We cannot eliminate the risk of accidental contamination or injury to employees or third parties from the use, storage, handling or disposal of these materials. In the event of contamination or injury, we could be held liable for any resulting damages, and any liability could exceed our resources or any applicable insurance coverage we may have. In 2018, we decommissioned our laboratory in Cambridge, Massachusetts; however, we could be held liable for any damages resulting from our prior use of hazardous chemicals and biological materials at this facility. Additionally, we are subject on an ongoing basis to federal, state and local laws and regulations governing the use, storage, handling and disposal of these materials and specified waste products. The cost of compliance with these laws and regulations may become significant, and our failure to comply may result in substantial fines or other consequences, and either could negatively affect our operating results.

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

We are subject to the FCPA, which prohibits companies and their intermediaries from making payments in violation of law to non-U.S. government officials for the purpose of obtaining or retaining business or securing any other improper advantage. We are increasing our direct sales and operations personnel outside the United States, in which we have limited experience. We use a limited number of independent distributors to sell our tests internationally, which requires a high degree of vigilance in maintaining our policy against participation in corrupt activity, because these distributors could be deemed to be our agents, and we could be held responsible for their actions. Other U.S. companies in the medical device and pharmaceutical fields have faced criminal penalties under the FCPA for allowing their agents to deviate from appropriate practices in doing business with these individuals. We are also subject to similar anti-bribery laws in the jurisdictions in which we operate, including the United Kingdom's Bribery Act of 2010, which also prohibits commercial bribery and makes it a crime for companies to fail to prevent bribery. 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 or any changes in these laws or the interpretation thereof. Any violations of these laws, or allegations of such violations, could disrupt our operations, involve significant management distraction, involve significant costs and expenses, including legal fees, and could result in a material adverse effect on our business, prospects, financial condition or results of operations. We could also incur severe penalties, including criminal and civil penalties, disgorgement and other remedial measures.

***Risks related to our intellectual property***

***Litigation or other proceedings or third-party claims of intellectual property infringement or misappropriation may require us to spend significant time and money, and could in the future prevent us from selling our tests or impact our stock price.***

Our commercial success will depend in part on our avoiding infringement of patents and proprietary rights of third parties, including for example the intellectual property rights of competitors. As we continue to commercialize our tests in their current or an updated form, launch different and expanded tests, and enter new markets, competitors might claim that our tests infringe or misappropriate their intellectual property rights as part of business strategies designed to impede our successful commercialization and entry into new markets. Our activities may be subject to claims that we infringe or otherwise violate patents or other intellectual property rights owned or controlled by third parties. We cannot assure you that our operations do not, or will not in the future, infringe existing or future patents. We may be unaware of patents that a third party, including for example a competitor in the genetic testing market, might assert are infringed by our business. There may also be patent applications that, if issued as patents, could be asserted against us. Third parties making claims against us for infringement or misappropriation of their intellectual property rights may seek and obtain injunctive or other equitable relief, which could effectively block our ability to perform our tests. Further, if a patent infringement suit were brought against us, we could be forced to stop or delay our development or sales of any tests or other activities that are the subject of such suit. Defense of these claims, regardless of merit, could cause us to incur substantial expenses and be a substantial diversion of our employee resources. Any adverse ruling or perception of an adverse ruling in defending ourselves could have a material adverse impact on our business and stock price. In the event of a successful claim of infringement against us by a third party, we may have to (1) pay substantial damages, possibly including treble damages and attorneys' fees if we are found to have willfully infringed patents; (2) obtain one or more licenses, which may not be available on commercially reasonable terms (if at all); (3) pay royalties; and/or (4) redesign any infringing tests or other activities, which may be impossible or require substantial time and monetary expenditure, all of which could have a material adverse impact on our cash position and business and financial condition.

If licenses to third-party intellectual property rights are or become required for us to engage in our business, we may be unable to obtain them at a reasonable cost, if at all. Even if such licenses are available, we could incur substantial costs related to royalty payments for licenses obtained from third parties, which could negatively affect our gross margins. Moreover, we could encounter delays in the introduction of tests while we attempt to develop alternatives. Defense of any lawsuit or failure to obtain any of these licenses on favorable terms could prevent us from commercializing tests, which could materially affect our ability to grow and thus adversely affect our business and financial condition.

***Developments in patent law could have a negative impact on our business.***

Although we view current U.S. Supreme Court precedent to be aligned with our belief that naturally occurring DNA sequences and detection of natural correlations between observed facts (such as patient genetic data) and an understanding of that fact's implications (such as a patient's risk of disease associated with certain genetic variations) should not be patentable, it is possible that subsequent determinations by the U.S. Supreme Court or other federal courts could limit, alter or potentially overrule current law. Moreover, from time to time the U.S. Supreme Court, other federal courts, the United States Congress or the U.S. Patent and Trademark Office, or USPTO, may change the standards of patentability, and any such changes could run contrary to, or otherwise be inconsistent with, our belief that naturally occurring DNA sequences and detection of natural correlations between observed facts and an understanding of that fact's implications should not be patentable, which could result in third parties newly claiming that our business practices infringe patents drawn from categories of patents which we currently view to be invalid as directed to unpatentable subject matter. For example, the U.S. Senate Judiciary Committee, Subcommittee on Intellectual Property held hearings in 2019 regarding a legislative proposal that would overrule current U.S. Supreme Court precedent concerning the scope of patentable subject matter. Our President and Chief Executive Officer, Sean George, appeared before this subcommittee. If such proposal were to be formulated as a bill and enacted into law, there could be an increase in third-party claims to patent rights over correlations between patient genetic data and its interpretation and such third parties may assert that our business practices infringe some of those resulting patent rights.

***Our inability to effectively protect our proprietary technologies, including the confidentiality of our trade secrets, could harm our competitive position.***

We currently rely upon trade secret protection and copyright, as well as non-disclosure agreements and invention assignment agreements with our employees, consultants and third parties, and to a limited extent patent protection, to protect our confidential and proprietary information. Although our competitors have utilized and are expected to continue utilizing similar methods and have aggregated and are expected to continue to aggregate similar databases of genetic testing information, our success will depend upon our ability to develop proprietary methods and databases and to defend any advantages afforded to us by such methods and databases relative to our competitors. If we do not protect our intellectual property adequately, competitors may be able to use our methods and databases and thereby erode any competitive advantages we may have.

We will be able to protect our proprietary rights from unauthorized use by third parties only to the extent that our proprietary technologies are covered by valid and enforceable patents or are effectively maintained as trade secrets. In this regard, we have applied, and we intend to continue applying, for patents covering such aspects of our technologies as we deem appropriate. However, we expect that potential patent coverage we may obtain will not be sufficient to prevent substantial competition. In this regard, we believe it is probable that others will independently develop similar or alternative technologies or design around those technologies for which we may obtain patent protection. In addition, any patent applications we file may be challenged and may not result in issued patents or may be invalidated or narrowed in scope after they are issued. Questions as to inventorship or ownership may also arise. Any finding that our patents or applications are unenforceable could harm our ability to prevent others from practicing the related technology, and a finding that others have inventorship or ownership rights to our patents and applications could require us to obtain certain rights to practice related technologies, which may not be available on favorable terms, if at all. If we initiate lawsuits to protect or enforce our patents, or litigate against third-party claims, which would be expensive, and, if we lose, we may lose some of our intellectual property rights. Furthermore, these lawsuits may divert the attention of our management and technical personnel.

We expect to rely primarily upon trade secrets and proprietary know-how protection for our confidential and proprietary information, and we have taken security measures to protect this information. These measures, however, may not provide adequate protection for our trade secrets, know-how or other confidential information. Among other things, we seek to protect our trade secrets and confidential information by entering into confidentiality agreements with employees and consultants. There can be no assurance that any confidentiality agreements that we have with our employees and consultants will provide meaningful protection for our trade secrets and confidential information or will provide adequate remedies in the event of unauthorized use or disclosure of such

information. Accordingly, there also can be no assurance that our trade secrets will not otherwise become known or be independently developed by competitors. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret can be difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, trade secrets may be independently developed by others in a manner that could prevent legal recourse by us. If any of our confidential or proprietary information, such as our trade secrets, were to be disclosed or misappropriated, or if any such information was independently developed by a competitor, our competitive position could be harmed.

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

The laws of some foreign countries do not protect proprietary rights to the same extent as the laws of the United States, and many companies have encountered significant challenges in establishing and enforcing their proprietary rights outside of the United States. These challenges can be caused by the absence of rules and methods for the establishment and enforcement of intellectual property rights outside of the United States. In addition, the legal systems of some countries, particularly developing countries, do not favor the enforcement of patents and other intellectual property protection, especially those relating to healthcare. This could make it difficult for us to stop the infringement of our patents, if obtained, or the misappropriation of our other intellectual property rights. For example, many foreign countries have compulsory licensing laws under which a patent owner must grant licenses to third parties. In addition, many countries limit the enforceability of patents against third parties, including government agencies or government contractors. In these countries, patents may provide limited or no benefit. Patent protection must ultimately be sought on a country-by-country basis, which is an expensive and time-consuming process with uncertain outcomes. Accordingly, we may choose not to seek patent protection in certain countries, and we will not have the benefit of patent protection in such countries. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business. Accordingly, our efforts to protect our intellectual property rights in such countries may be inadequate. In addition, changes in the law and legal decisions by courts in the United States and foreign countries may affect our ability to obtain adequate protection for our technology and the enforcement of intellectual property.

***Third parties may assert that our employees or consultants have wrongfully used or disclosed confidential information or misappropriated trade secrets.***

We employ individuals who were previously employed at universities or genetic testing, diagnostic or other healthcare companies, including our competitors or potential competitors. Although we try to ensure that our employees and consultants do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that we or our employees or consultants have inadvertently or otherwise used or disclosed intellectual property, including trade secrets or other proprietary information, of a former employer or other third parties. Further, we may be subject to ownership disputes in the future arising, for example, from conflicting obligations of consultants or others who are involved in developing our intellectual property. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

***Risks related to being a public company***

***We 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 incur significant legal, accounting and other expenses, including costs associated with public company reporting requirements. In addition, the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, as well as rules implemented by the SEC and the New York Stock Exchange, or NYSE, impose a number of requirements on public companies, including with respect to corporate governance practices. The SEC and other regulators have continued to adopt new rules and regulations and make additional changes to existing regulations that require our compliance. In addition, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or the Dodd-Frank Act, enacted in 2010, includes significant corporate governance and executive-compensation-related provisions. Our management and other personnel need to devote a substantial amount of time to these compliance and disclosure obligations. If these requirements divert the attention of our management and personnel from other aspects of our business concerns, they could have a material adverse effect on our business, financial condition and results of operations. Moreover, these rules and regulations applicable to public companies substantially increase our legal, accounting and financial compliance costs, require that we hire additional personnel and make some activities more time consuming and costly. It may also be more expensive for us to obtain director and officer liability insurance.

***If we are unable to maintain effective internal control 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.***

We are required to maintain internal control over financial reporting and to report any material weaknesses in such internal controls. Section 404 of the Sarbanes-Oxley Act requires that we evaluate and determine the effectiveness of our internal control over financial reporting and provide a management report on our internal control over financial reporting. If we have a material weakness 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 compiled the system and process documentation necessary to perform the evaluation needed to comply with Section 404 of the Sarbanes-Oxley Act. We need to maintain and enhance these processes and controls as we grow and we have required, and may continue to require, additional personnel and resources to do so.

During the evaluation and testing process, if we identify one or more material weaknesses in our internal controls, our management will be unable to conclude that our internal control over financial reporting is effective. Because we were no longer be an emerging growth company as of December 31, 2019, our independent registered public accounting firm was required to issue an attestation report on the effectiveness of our internal control over financial reporting for the fiscal year 2019. 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. Internal control deficiencies could also result in the restatement of our financial results in the future.

### **Risks related to our Convertible Senior Notes**

***Servicing our debt requires a significant amount of cash, and we may not have sufficient cash flow from our business to pay our substantial debt.***

In September 2019, we issued \$350.0 million aggregate principal amount of our 2.00% Convertible Senior Notes due 2024 in a private placement.

Our ability to make scheduled payments of the principal of, to pay interest on or to refinance our indebtedness, including the notes, depends on our future performance, which is subject to economic, financial, competitive and other factors beyond our control. Our business may not continue to generate cash flow from operations in the future sufficient to service our debt and make necessary capital expenditures. If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as selling assets, restructuring debt or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to refinance our indebtedness will depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on our debt obligations.

***We may not have the ability to raise the funds necessary to settle conversions of the Convertible Senior Notes in cash or to repurchase the notes upon a fundamental change, and our future debt may contain limitations on our ability to pay cash upon conversion or repurchase of the notes.***

Holders of the notes have the right to require us to repurchase all or any portion of their notes upon the occurrence of a fundamental change at a fundamental change repurchase price equal to 100% of the principal amount of the notes to be repurchased, *plus* accrued and unpaid interest, if any. In addition, upon conversion of the notes, unless we elect to deliver solely shares of our common stock to settle such conversion (other than paying cash in lieu of delivering any fractional share), we will be required to make cash payments in respect of the notes being converted. However, we may not have enough available cash or be able to obtain financing at the time we are required to make repurchases of notes surrendered therefor or notes being converted. In addition, our ability to repurchase the notes or to pay cash upon conversions of the notes may be limited by law, by regulatory authority or by agreements governing our future indebtedness. Our failure to repurchase notes at a time when the repurchase is required by the indenture or to pay any cash payable on future conversions of the notes as required by the indenture would constitute a default under the indenture. A default under the indenture or the occurrence of the fundamental change itself could also lead to a default under agreements governing our future indebtedness. If the repayment of the related indebtedness were to be accelerated after any applicable notice or grace periods, we may

not have sufficient funds to repay the indebtedness and repurchase the notes or make cash payments upon conversions thereof.

***The conditional conversion feature of the Convertible Senior Notes, if triggered, may adversely affect our financial condition and operating results.***

In the event the conditional conversion feature of the notes is triggered, holders of notes will be entitled to convert the notes at any time during specified periods at their option. If one or more holders elect to convert their notes, unless we elect to satisfy our conversion obligation by delivering solely shares of our common stock (other than paying cash in lieu of delivering any fractional share), we would be required to settle a portion or all of our conversion obligation through the payment of cash, which could adversely affect our liquidity. In addition, even if holders do not elect to convert their notes, we could be required under applicable accounting rules to reclassify all or a portion of the outstanding principal of the notes as a current rather than long-term liability, which would result in a material reduction of our net working capital.

***The accounting method for convertible debt securities that may be settled in cash, such as the notes, could have a material effect on our reported financial results.***

In May 2008, the Financial Accounting Standards Board, or FASB, issued FASB Staff Position No. APB 14-1, *Accounting for Convertible Debt Instruments That May Be Settled in Cash Upon Conversion (Including Partial Cash Settlement)*, which has subsequently been codified as Accounting Standards Codification 470-20, *Debt with Conversion and Other Options*, or ASC 470-20. Under ASC 470-20, an entity must separately account for the liability and equity components of the convertible debt instruments (such as the notes) that may be settled entirely or partially in cash upon conversion in a manner that reflects the issuer's economic interest cost. The effect of ASC 470-20 on the accounting for the notes is that the equity component is required to be included in the additional paid-in capital section of stockholders' equity on our consolidated balance sheet at issuance, and the value of the equity component would be treated as original issue discount for purposes of accounting for the debt component of the notes. As a result, we will be required to record a greater amount of non-cash interest expense in current periods presented as a result of the amortization of the discounted carrying value of the notes to their face amount over the term of the notes. We will report larger net losses or lower net income in our financial results because ASC 470-20 will require interest to include both the current period's amortization of the debt discount and the instrument's non-convertible coupon interest rate, which could adversely affect our reported or future financial results, the trading price of our common stock and the trading price of the notes.

In addition, under certain circumstances, convertible debt instruments (such as the notes) that may be settled entirely or partly in cash are currently accounted for utilizing the treasury stock method, the effect of which is that the shares issuable upon conversion of the notes are not included in the calculation of diluted net income (loss) per share except to the extent that the conversion value of the notes exceeds their principal amount. Under the treasury stock method, for diluted earnings per share purposes, the transaction is accounted for as if the number of shares of common stock that would be necessary to settle such excess, if we elected to settle such excess in shares, are issued. We cannot be sure that the accounting standards in the future will continue to permit the use of the treasury stock method. If we are unable or otherwise elect not to use the treasury stock method in accounting for the shares issuable upon conversion of the notes, then our diluted earnings per share would be adversely affected. For example, the FASB recently published an exposure draft proposing to amend these accounting standards to eliminate the treasury stock method for convertible instruments and instead require application of the "if-converted" method. Under that method, if it is adopted, diluted net income (loss) per share would generally be calculated assuming that all the notes were converted solely into shares of common stock at the beginning of the reporting period, unless the result would be anti-dilutive. The application of the "if-converted" method may reduce our reported diluted net income (or further increase our diluted net loss, as the case may be) per share.

**Risks related to our common stock**

***Our stock price is volatile, and you may not be able to sell shares of our common stock at or above the price you paid.***

The trading price of our common stock is volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control. These factors include:

- actual or anticipated fluctuations in our operating results;
- competition from existing tests or new tests that may emerge;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures, collaborations or capital commitments;

- failure to meet or exceed financial estimates and projections of the investment community or that we provide to the public;
- issuance of new or updated research or reports by securities analysts or changed recommendations for our stock;
- our focus on long-term goals over short-term results;
- the timing and magnitude of our investments in the growth of our business;
- actual or anticipated changes in regulatory oversight of our business;
- additions or departures of key management or other personnel;
- disputes or other developments related to our intellectual property or other proprietary rights, including litigation;
- changes in reimbursement by current or potential payers;
- general economic and market conditions; and
- issuances of significant amounts of our common stock.

In addition, the stock market in general, and the market for stock of life sciences companies in particular, has experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of those companies. Broad market and industry factors may seriously affect the market price of our common stock, regardless of our actual operating performance. In addition, in the past, following periods of volatility in the overall market and the market price of a particular company's securities, securities class action litigation has often been instituted against these companies. This litigation, if instituted against us, could result in substantial costs and a diversion of our management's attention and resources.

***Sales of a substantial number of shares of our common stock in the public market could cause our stock price to fall.***

Sales of a substantial number of shares of our common stock in the public market or the perception that these sales might occur could depress the market price of our common stock and could impair our ability to raise capital through the sale of additional equity securities. We are unable to predict the effect that sales may have on the prevailing market price of our common stock. In addition, the sale of substantial amounts of our common stock could adversely impact its price. As of December 31, 2019, we had outstanding approximately 98.8 million shares of our common stock, options to purchase approximately 3.5 million shares of our common stock (of which approximately 3.0 million were exercisable as of that date), outstanding restricted stock units representing approximately 8.9 million shares of our common stock (which includes an estimated number of Time-based RSUs and PRSUs granted in connection with our acquisition of Singular Bio), outstanding Series A convertible preferred stock convertible into approximately 0.1 million shares of our common stock and warrants to purchase 0.6 million shares of our common stock. The foregoing does not include additional shares that may be issuable in 2020 upon the achievement of certain milestones in connection with our acquisition of Jungla or shares that may be issuable in the future in connection with the Convertible Senior Notes. In addition, up to \$93.7 million of our common stock was available for sale as of December 31, 2019 pursuant to our at the market sales agreement. The sale or the availability for sale of a large number of shares of our common stock in the public market could cause the price of our common stock to decline.

***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 and our business. We do not control these analysts or the content and opinions 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, change their price targets, 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 have never paid dividends on our capital stock, and we do not anticipate paying dividends in the foreseeable future.***

We have never paid dividends on any of our capital stock and currently intend to retain any future earnings to fund the growth of our business. Any determination to pay dividends in the future will be at the discretion of our board of directors and will depend on our financial condition, operating results, capital requirements, general business conditions and other factors that our board of directors may deem relevant. As a result, capital appreciation, if any, of our common stock will be the sole source of gain for the foreseeable future.

***Anti-takeover provisions in our charter documents and under Delaware law could discourage, delay or prevent a change in control and may affect the trading price of our common stock.***

Provisions in our restated certificate of incorporation and our amended and restated bylaws may have the effect of delaying or preventing a change of control or changes in our management. Our restated certificate of incorporation and amended and restated bylaws include provisions that:

- authorize our board of directors to issue, without further action by the stockholders, up to 20,000,000 shares of undesignated preferred stock;
- require that any action to be taken by our stockholders be effected at a duly called annual or special meeting and not by written consent;
- specify that special meetings of our stockholders can be called only by our board of directors, our chairman of the board or our chief executive officer;
- establish an advance notice procedure for stockholder approvals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to our board of directors;
- establish that our board of directors is divided into three classes, Class I, Class II and Class III, with each class serving staggered terms;
- provide that our directors may be removed only for cause;
- provide that vacancies on our board of directors may, except as otherwise required by law, be filled only by a majority of directors then in office, even if less than a quorum; and
- require a super-majority of votes to amend certain of the above-mentioned provisions as well as to amend our bylaws generally.

In addition, we are subject to the provisions of Section 203 of the Delaware General Corporation Law regulating corporate takeovers. Section 203 generally prohibits us from engaging in a business combination with an interested stockholder subject to certain exceptions.

***Our certificate of incorporation designates the Court of Chancery of the State of Delaware as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or other employees.***

Our certificate of incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for:

- any derivative action or proceeding brought on our behalf;
- any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers, or other employees to us or our stockholders;
- any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law; or
- any action asserting a claim against us governed by the internal affairs doctrine.

Any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock shall be deemed to have notice of and consented to the provisions of our certificate of incorporation described above. This choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. Alternatively, if a court were to find these provisions of our certificate of incorporation inapplicable to, or unenforceable in respect of, one or more of the specified types of actions or



proceedings, we may incur additional costs associated with resolving such matters in other jurisdictions, which could adversely affect our business, financial condition or results of operations.

**ITEM 1B. Unresolved Staff Comments.**

None.

**ITEM 2. Properties.**

Our headquarters and main production facility is located in San Francisco, California, where we currently lease and occupy approximately 103,000 square feet of laboratory and office space. The lease for this facility expires in July 2026 and we may renew the lease for an additional ten years.

We also lease approximately 75,000 square feet of additional office and laboratory space in California, Massachusetts and New York.

We believe that our facilities are adequate for our current needs and that additional space will be available on commercially reasonable terms if required.

**ITEM 3. Legal Proceedings.**

We are not a party to any material legal proceedings on the date of this report. We may from time to time become involved in legal proceedings arising in the ordinary course of business, and the resolution of any such claims could be material.

**ITEM 4. Mine Safety Disclosure.**

Not applicable.

PART II

**ITEM 5. Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.**

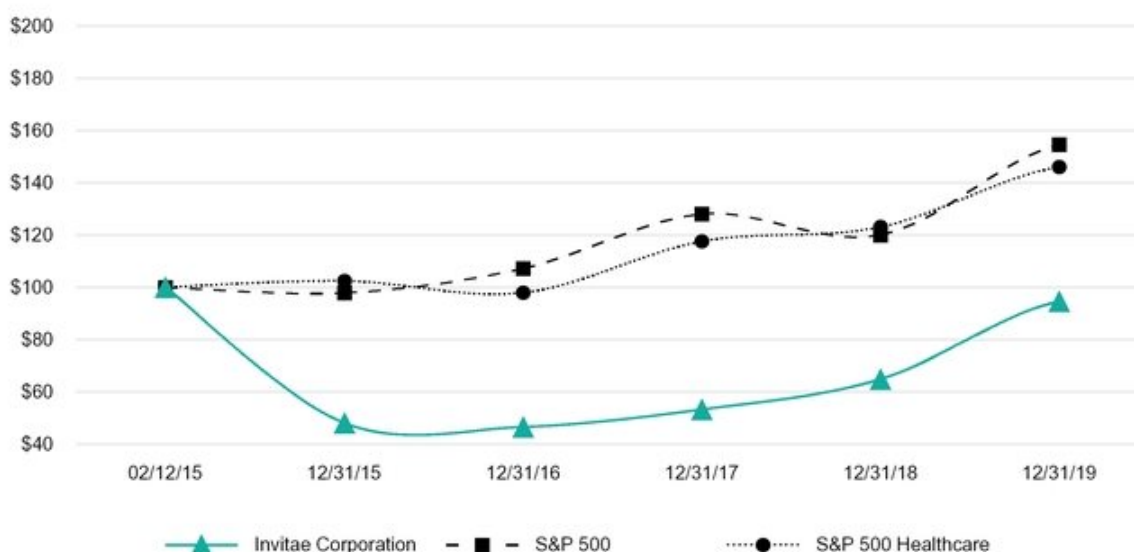
Our common stock has been publicly traded on the New York Stock Exchange under the symbol “NVTA” since February 12, 2015. Prior to that time, there was no public market for our common stock.

As of February 24, 2020, there were 62 stockholders of record of our common stock. The actual number of stockholders is greater than this number of record holders and includes stockholders who are beneficial owners but whose shares are held in street name by brokers and other nominees.

**Stock performance graph**

The following information shall not be deemed to be soliciting material or to be filed with the SEC, or subject to Regulations 14A or 14C under the Securities Exchange Act of 1934, or Exchange Act, or to the liabilities of Section 18 of the Exchange Act nor shall such information be incorporated by reference into any future filing under the Securities Act or the Exchange Act, except to the extent that we specifically incorporate it by reference into such filing.

Comparison of Historical Cumulative Total Return Among Invitae Corporation, the S&P 500 Index and the S&P 500 Healthcare Index (\*)



(\*) The above graph shows the cumulative total stockholder return of an investment of \$100 in cash from February 12, 2015 (the date our common stock commenced trading on the New York Stock Exchange) through December 31, 2019 for: (i) our common stock; (ii) the S&P 500 Index; and (iii) the S&P 500 Healthcare Index. All values assume reinvestment of the full amount of all dividends. The comparisons in the table are required by the SEC and are not intended to be forecasts or indicative of future stockholder returns.

	2/12/2015	12/31/2015	12/31/2016	12/31/2017	12/31/2018	12/31/2019
Invitae Corporation	\$ 100.00	\$ 48.15	\$ 46.57	\$ 53.26	\$ 64.87	\$ 94.60
S&P 500	\$ 100.00	\$ 97.87	\$ 107.20	\$ 128.02	\$ 120.03	\$ 154.70
S&P 500 Healthcare Index	\$ 100.00	\$ 102.41	\$ 97.94	\$ 117.53	\$ 123.05	\$ 146.03

**ITEM 6. Selected Financial Data.**

The information set forth below should be read together with “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our audited consolidated financial statements and related notes included elsewhere in this report. The selected consolidated balance sheet data at December 31, 2019 and 2018 and the selected consolidated statements of operations data for each of the years ended December 31, 2019, 2018, and 2017 have been derived from our audited consolidated financial statements that are included elsewhere in this report. The selected consolidated balance sheet data at December 31, 2017, 2016 and 2015 and the selected consolidated statement of operations data for the years ended December 31, 2016 and 2015 have been derived from our audited consolidated financial statements not included in this report. Historical results are not necessarily indicative of results to be expected in any future period.

	Year Ended December 31,				
	2019 <sup>(1,3)</sup>	2018 <sup>(4)</sup>	2017 <sup>(1)</sup>	2016	2015
(In thousands except per share data)					
<b>Consolidated Statements of Operations Data:</b>					
Test revenue	\$ 212,473	\$ 144,560	\$ 65,169	\$ 24,840	\$ 8,378
Other revenue	4,351	3,139	3,052	208	—
Total revenue	216,824	147,699	68,221	25,048	8,378
<b>Costs and operating expenses:</b>					
Cost of revenue <sup>(5)</sup>	118,103	80,105	50,142	27,878	16,523
Research and development <sup>(5)</sup>	141,526	63,496	46,469	44,630	42,806
Selling and marketing <sup>(5)</sup>	122,237	74,428	53,417	28,638	22,479
General and administrative <sup>(5)</sup>	79,070	52,227	39,472	24,085	16,047
Total costs and operating expenses	460,936	270,256	189,500	125,231	97,855
Loss from operations	(244,112)	(122,557)	(121,279)	(100,183)	(89,477)
Other income (expense), net	(3,891)	(2,568)	(303)	348	(94)
Interest expense	(12,412)	(7,030)	(3,654)	(421)	(211)
Net loss before taxes	(260,415)	(132,155)	(125,236)	(100,256)	(89,782)
Income tax benefit	(18,450)	(2,800)	(1,856)	—	—
Net loss	\$ (241,965)	\$ (129,355)	\$ (123,380)	\$ (100,256)	\$ (89,782)
Net loss per share, basic and diluted <sup>(6)</sup>	\$ (2.66)	\$ (1.94)	\$ (2.65)	\$ (3.02)	\$ (3.18)
Shares used in computing net loss per share, basic and diluted	90,859	66,747	46,512	33,176	28,213

	As of December 31,				
	2019 <sup>(1,2,3)</sup>	2018 <sup>(4)</sup>	2017 <sup>(1)</sup>	2016	2015
(In thousands)					
<b>Consolidated Balance Sheet Data:</b>					
Cash and cash equivalents	\$ 151,389	\$ 112,158	\$ 12,053	\$ 66,825	\$ 73,238
Marketable securities	240,436	13,727	52,607	25,798	53,780
Working capital	360,538	129,127	53,294	87,047	120,433
Total assets	781,601	282,959	211,078	130,651	156,676
Lease obligations	50,071	3,312	5,412	1,575	3,164
Debt	—	74,477	39,084	12,102	7,040
Convertible senior notes, net	268,755	—	—	—	—
Total liabilities	401,961	121,120	89,284	31,577	18,300
Accumulated deficit	(758,677)	(516,712)	(398,598)	(275,218)	(174,962)
Total stockholders' equity	379,640	161,839	121,794	99,074	138,376

- (1) In 2019 we completed the acquisition of three businesses and in 2017 we completed the acquisition of four businesses, all of which are included in our selected consolidated financial data as of each acquisition date.
- (2) On January 1, 2019, we adopted Accounting Standards Codification, or ASC, Topic 842 using the modified retrospective transition method which required the recognition of operating and finance lease right-of-use assets and operating lease liabilities to be recognized on our consolidated balance sheets. Prior period amounts are presented as originally reported based upon the accounting standards in effect for those periods.
- (3) In September 2019, we issued \$350.0 million aggregate principal amount of 2.00% Convertible Senior Notes due 2024 and also settled our previous debt obligations which resulted in the recognition of \$8.9 million of debt extinguishment costs.
- (4) On January 1, 2018, we adopted ASC Topic 606 using the modified retrospective transition method. Prior period amounts are presented as originally reported based upon the accounting standards in effect for those periods.
- (5) Includes employee stock-based compensation as follows:

	Year Ended December 31,				
	2019	2018	2017	2016	2015
	(In thousands)				
Cost of revenue	\$ 4,563	\$ 2,960	\$ 2,093	\$ 1,353	\$ 368
Research and development	52,450	7,017	6,158	4,976	1,545
Selling and marketing	7,641	4,887	3,956	1,709	688
General and administrative	11,294	5,986	7,014	2,661	876
Total stock-based compensation	<u>\$ 75,948</u>	<u>\$ 20,850</u>	<u>\$ 19,221</u>	<u>\$ 10,699</u>	<u>\$ 3,477</u>

See Note 4, "Business combinations," and Note 10, "Stock Incentive Plans," in our audited consolidated financial statements included elsewhere in this report for further information regarding our stock-based compensation, including inducement awards granted to new employees who joined Invitae in connection with our acquisition of Singular Bio, Inc in June 2019.

- (6) See Note 2, "Summary of significant accounting policies," and Note 12, "Net loss per share," in our audited consolidated financial statements included elsewhere in this report for an explanation of the calculations of our basic and diluted net loss per share.

## **ITEM 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.**

*The following discussion of our financial condition and results of operations should be read in conjunction with our financial statements and the related notes included in Item 8 of this report. Historic results are not necessarily indicative of future results.*

### **Business overview**

We offer high-quality, comprehensive, affordable genetic testing across multiple clinical areas, including hereditary cancer, cardiology, neurology, pediatrics, metabolic conditions and rare diseases. To augment our offering and realize our mission, we have acquired multiple assets including four businesses in 2017, which expanded our suite of genome management offerings and completed our entry into prenatal and perinatal genetic testing. In the first quarter of 2019, we expanded our reproductive offering by introducing our Non-invasive Prenatal Screen ("NIPS") and in the second quarter of 2019, we acquired Singular Bio, Inc. ("Singular Bio") to assist in lowering the costs of this offering. Also in June 2019, we launched a direct channel to consumers to increase accessibility to our testing platform. In July 2019, we acquired Jungla Inc. ("Jungla") to further enhance our genetic variant interpretation and the quality of results we deliver. In November 2019, we acquired Clear Genetics, Inc. ("Clear Genetics") to expand our ability to scale and deliver genetic information.

We have experienced rapid growth. For the years ended December 31, 2019, 2018 and 2017, our revenue was \$216.8 million, \$147.7 million and \$68.2 million, respectively and we incurred net losses of \$242.0 million, \$129.4 million and \$123.4 million, respectively. At December 31, 2019, our accumulated deficit was \$758.7 million. To meet the demands of scaling our business, we increased our number of employees to approximately 1,300 at December 31, 2019 from approximately 800 on December 31, 2018. Our sales force grew to approximately 230 at December 31, 2019 from approximately 130 at December 31, 2018. We expect headcount will continue to increase as we add staff to support anticipated growth.

Sales of our tests have grown significantly. In 2019, 2018 and 2017, we generated approximately 469,000, 292,000 and 145,000 billable tests, respectively. Through December 31, 2019, approximately 34% of the billable tests we performed have been billable to institutions and patients, and the remainder have been billable to third-party payers. Many of the gene tests on our assays are tests for which insurers reimburse. However, when we do not have reimbursement policies or contracts with private insurers, our claims for reimbursement may be denied upon submission, and we must appeal the claims. The appeals process is time consuming and expensive, and may not result in payment. Even if we are successful in achieving reimbursement, we may be paid at lower rates than if we were under contract with the third-party payer. When there is not a contracted rate for reimbursement, there is typically a greater coinsurance or copayment requirement from the patient which may result in further delay in payment for these tests.

We expect to incur operating losses for the near-term future and may need to raise additional capital in order to fund our operations. If we are unable to achieve our revenue growth objectives and successfully manage our costs, we may not be able to achieve profitability.

We believe that the keys to our future growth will be to increase billable test volumes, achieve broad reimbursement coverage for our tests from third-party payers, drive down the price for genetic analysis and interpretation, steadily increase the amount of genetic content we offer, consistently improve the client experience, drive physician and patient utilization of our website for ordering and delivery of results and increase the number of strategic partners working with us to add value for our clients.

### **Factors affecting our performance**

#### **Number of billable tests**

The growth in our test revenue is tied to the number of tests for which we bill third-party payers, institutions, partners or patients, which we refer to as billable tests. We typically bill for our services following delivery of the billable test report derived from testing samples and interpreting the results. We incur the expenses associated with a test in the period in which the test is processed regardless of when payment is received with respect to that test. We believe the number of billable tests in any period is the most important indicator of the growth in our test revenue, and with time, this will translate into the number of customers we add to our platform.

#### **Success obtaining and maintaining reimbursement**

Our ability to increase the number of billable tests and our revenue will depend in part on our success achieving broad reimbursement coverage and laboratory service contracts for our tests from third-party payers and

agreements with institutions and partners. Reimbursement may depend on a number of factors, including a payer's determination that a test is appropriate, medically necessary and cost-effective, as well as whether we are in contract, where we get paid more consistently and at higher rates. Because each payer makes its own decision as to whether to establish a policy or enter into a contract to reimburse for our testing services and specific tests, seeking these approvals is a time-consuming and costly process. In addition, clinicians and patients may decide not to order our tests if the cost of the test is not covered by insurance. Because we require an ordering physician to requisition a test, our revenue growth also depends on our ability to successfully promote the adoption of our testing services and expand our base of ordering clinicians. We believe that establishing coverage and obtaining contracts from third-party payers is an important factor in gaining adoption by ordering clinicians. Our arrangements for laboratory services with payers cover approximately 295 million lives, comprised of Medicare, all national commercial health plans, and Medicaid in most states, including California (Medi-Cal), our home state.

In cases where we have established reimbursement rates with third-party payers, we face additional challenges in complying with their procedural requirements for reimbursement. These requirements may vary from payer to payer, and it may be time-consuming and require substantial resources to meet these requirements. We may also experience delays in or denials of coverage if we do not adequately comply with these requirements. In addition, we have experienced, and may continue to experience, delays in reimbursement when we transition to being an in-network provider with a payer.

We expect to continue to focus our resources on increasing adoption of, and expanding coverage and reimbursement for, our current tests, tests provided by companies we acquire and any future tests we may develop. However, if we are not able to continue to obtain and maintain adequate reimbursement from third-party payers, institutions and partners for our testing services and expand the base of clinicians and patients ordering our tests, we may not be able to effectively increase the number of billable tests or our revenue.

#### **Ability to lower the costs associated with performing our tests**

Reducing the costs associated with performing our genetic tests is both a focus and a strategic objective of ours. Over the long term, we will need to reduce the cost of raw materials by improving the output efficiency of our assays and laboratory processes, modifying our platform-agnostic assays and laboratory processes to use materials and technologies that provide equal or greater quality at lower cost, improve how we manage our materials, port some tests onto a next generation sequencing platform and negotiate favorable terms for our materials purchases. Our acquisition of Singular Bio is a component of this objective and we expect the technology acquired in this transaction, once developed, to help decrease the costs associated with our NIPS offering. We also intend to continue to design and implement hardware and software tools that are designed to reduce personnel-related costs for both laboratory and clinical operations/medical interpretation by increasing personnel efficiency and thus lowering labor costs per test. Finally, we will need to reduce our costs of providing tests internationally to enable us to expand more rapidly outside of the United States.

#### **Ability to expand our genetic content**

Our focus on reducing the average cost per test will have a countervailing force — increasing the number of tests we offer and the content of each test. We intend to continue to expand our test menus by steadily releasing additional genetic content for the same or lower prices per test, ultimately leading to affordable whole genome services. The breadth and flexibility of our offering will be a critical factor in our ability to address new markets, including internationally, for genetic testing services. Both of these, in conjunction with our continued focus on strategic partnerships, will be important to our ability to continue to grow the volume of billable tests we deliver.

#### **Investment in our business and timing of expenses**

We plan to continue to invest in our genetic testing and information management business. We deploy state-of-the-art and costly technologies in our genetic testing services, and we intend to continue to scale our infrastructure, including our testing capacity and information systems. We also expect to incur software development costs as we seek to further automate our laboratory processes and our genetic interpretation and report sign-out procedures, scale our customer service capabilities to improve our customers' experience, and expand the functionality of our website. We will incur costs related to marketing and branding as we spread our initiatives beyond our current customer base and focus on providing access to customers through our website. We plan to hire additional personnel as necessary to support anticipated growth, including software engineers, sales and marketing personnel, billing personnel, research and development personnel, medical specialists, biostatisticians and geneticists. We will also incur additional costs related to the expansion of our production facilities in San Francisco and Irvine to accommodate growth and as we expand internationally. In addition, we

expect to incur ongoing expenses as a result of operating as a public company. The expenses we incur may vary significantly by quarter as we focus on building out different aspects of our business.

### **How we recognize revenue**

We generally recognize revenue on an accrual basis, which is when a customer obtains control of the promised goods or services, typically a test report. Accrual amounts recognized are based on estimates of the consideration that we expect to receive and such estimates are adjusted and subsequently recorded until fully settled. Changes to such estimates may increase or decrease revenue recognized in future periods. Revenue from our tests may not be equal to billed amounts due to a number of factors, including differences in reimbursement rates, the amounts of patient copayments, the existence of secondary payers and claim denials.

### **Financial overview**

#### ***Revenue***

We primarily generate revenue from the sale of our tests, which provide the analysis and associated interpretation of the sequencing of parts of the genome. Clients are billed upon delivery of test results. Our ability to increase our revenue will depend on our ability to increase our market penetration, obtain contracted reimbursement coverage from third-party payers, enter into contracts with institutions and partners, and increase the rate at which we are paid for tests performed.

#### ***Cost of revenue***

Cost of revenue reflects the aggregate costs incurred in delivering test results to clinicians and patients and includes expenses for materials and supplies, personnel-related costs, equipment and infrastructure expenses associated with testing and allocated overhead including rent, equipment depreciation, amortization of acquired intangibles, and utilities. Costs associated with performing our test are recorded as the patient's sample is processed. We expect cost of revenue to generally increase in line with the increase in the number of tests we perform. However, we expect that the cost per test will decrease over time due to the efficiencies we expect to gain as test volume increases and from automation and other cost reductions. These expected reductions will be offset by new tests which often have a higher cost per test during the introductory phases before we are able to gain efficiencies. The cost per test may fluctuate from quarter to quarter.

#### ***Operating expenses***

Our operating expenses are classified into three categories: research and development, selling and marketing, and general and administrative. For each category, the largest component is personnel-related costs, which include salaries, employee benefit costs, bonuses, commissions, as applicable, and stock-based compensation expense.

#### ***Research and development***

Research and development expenses represent costs incurred to develop our technology and future tests. These costs are principally for process development associated with our efforts to expand the number of genes we can evaluate in our tests and with our efforts to lower the cost of performing our tests. In addition, we incur process development costs to further develop the software we use to operate our laboratory, analyze the data it generates, process customer orders, enable ease of customer ordering, deliver reports and automate our business processes. These costs consist of personnel-related costs, including stock-based compensation, laboratory supplies and equipment expenses, consulting costs, amortization of acquired intangible assets, and allocated overhead including rent, information technology, equipment depreciation and utilities.

We expense all research and development costs in the periods in which they are incurred. We expect our research and development expenses to increase as we continue our efforts to develop additional tests, make investments to reduce testing costs, streamline our technology to provide patients access to testing, scale our business domestically and internationally and acquire and integrate new technologies. During the second quarter of 2019 through our acquisition of Singular Bio, we recognized \$30.0 million of in-process R&D technology using an income approach. This technology is estimated to be developed in 2021 with significant development costs incurred during the second half of 2019 and expected through development completion. If not completed timely, the ability to lower the cost of our NIPS offering may be delayed. Additionally, we expect stock-based compensation to significantly increase in future periods related to Singular Bio, which we acquired in June 2019.

### *Selling and marketing*

Selling and marketing expenses consist of personnel-related costs, client service expenses, advertising and marketing expenses, educational and promotional expenses, market research and analysis, and allocated overhead including rent, information technology, equipment depreciation, amortization of acquired intangibles, and utilities. We expect our selling and marketing expenses to significantly increase as we expand our salesforce and continue to build our brand.

### *General and administrative*

General and administrative expenses include executive, finance and accounting, billing and collections, legal and human resources functions as well as other administrative costs. These expenses include personnel-related costs; audit, accounting and legal expenses; consulting costs; allocated overhead including rent, information technology, equipment depreciation, and utilities; costs incurred in relation to our collaboration and co-development agreements; and post-combination expenses incurred in relation to companies we acquire. We expect our general and administrative expenses to increase as we support continued growth of operations.

### *Other expense, net*

Other expense, net, primarily consists of losses on extinguishment of debt partially offset by interest income earned on our cash equivalents and marketable securities.

### *Interest expense*

Interest expense is primarily attributable to interest incurred related to our debt financings and finance leases. See Note 8, "Commitments and contingencies" in Notes to Consolidated Financial Statements in Part II, Item 8 of this Annual Report for more details.

### *Income tax benefit*

Since we generally establish a full valuation allowance against our deferred tax balances, our income tax benefit primarily consists of tax impacts of our deferred income tax assessments resulting from our acquisitions.

### **Critical accounting policies and estimates**

Management's discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles, or U.S. GAAP. The preparation of these financial statements requires us to make judgments, estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported revenue generated and expenses incurred during the reporting periods. We evaluate our estimates on an ongoing basis. Our estimates are based on current facts, our historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions and any such differences may be material. We believe that the accounting policies discussed below are critical to understanding our historical and future performance, as these policies relate to the more significant areas involving management's judgments and estimates.

### **Revenue recognition**

#### **Revenue recognition**

We recognize revenue when control of the promised goods or services is transferred to the customer in an amount that reflects the consideration it expects to be entitled to in exchange for those goods or services. All revenues are generated from contracts with customers.

#### *Test revenue*

The majority of our revenue is generated from genetic testing services that provide analysis and associated interpretation of the sequencing of parts of the genome. Test orders are placed under signed requisitions, and we often enter into contracts with institutions (e.g., hospitals, clinics, partners) and insurance companies that include pricing provisions under which such tests are billed. Billing terms are generally net thirty to sixty days.



While the transaction price of diagnostic tests is originally established either via contract or pursuant to our standard list price, we often provide concessions for tests billed to insurance carriers, and therefore the transaction price for patient insurance-billed tests is considered to be variable and revenue is recognized based on an estimate of the consideration to which we will be entitled at an amount for which it is probable that a reversal of cumulative consideration will not occur. Making these estimates requires significant judgments based upon such factors as length of payer relationship, historical payment patterns, changes in contract provisions and insurance reimbursement policies. These judgments are reviewed quarterly and updated as necessary.

In connection with some diagnostic test orders, we offer limited re-requisition rights (“Re-Requisition Rights”) that are considered distinct at contract inception, and therefore certain diagnostic test orders contain two performance obligations, the performance of the original test and the Re-Requisition Rights. When Re-Requisition Rights are granted, we allocate the transaction price to each performance obligation based on the relative estimated standalone selling prices. In order to comply with loss contract rules, the allocations are adjusted, if necessary, to ensure the amount deferred for Re-Requisition Rights is no less than the estimated cost of fulfilling our related obligations.

We look to transfer of control in assessing timing of recognition of revenue in connection with each performance obligation. In general, revenue in connection with diagnostic tests is recognized upon delivery of the underlying clinical report or when the report is made available on our web portal. Outstanding performance obligations pertaining to orders received but for which the underlying report has not been issued are generally satisfied within a thirty-day period. Revenue in connection with Re-Requisition Rights is recognized as the rights are exercised or expire unexercised, which is generally within ninety days of initial deferral.

#### *Other revenue*

We also enter into collaboration and genome network contracts. Collaboration agreements provide customers with diagnostic testing and related data aggregation reporting services that are provided over the contract term. Collaboration revenue is recognized as the testing and reporting services are delivered to the customer. Genome network offerings consist of subscription services related to a proprietary software platform designed to connect patients, clinicians, advocacy organizations, researchers and therapeutic developers to accelerate the understanding, diagnosis and treatment of hereditary disease. Such services are recognized on a straight-line basis over the subscription periods.

Amounts due under collaboration and genome network agreements are typically billable on net thirty-day terms.

#### **Business combinations**

We apply ASC 805, *Business Combinations*, or ASC 805, which requires recognition of assets acquired, liabilities assumed, and contingent consideration at their fair value on the acquisition date with subsequent changes recognized in earnings; requires acquisition-related expenses and restructuring costs to be recognized separately from the business combination and expensed as incurred; requires in-process research and development to be capitalized at fair value as an indefinite-lived intangible asset until completion or abandonment; and requires that changes in accounting for deferred tax asset valuation allowances and acquired income tax uncertainties after the measurement period be recognized as a component of provision for taxes.

We account for acquisitions of entities that include inputs and processes and have the ability to create outputs as business combinations. The tangible and identifiable intangible assets acquired and liabilities assumed in a business combination are recorded based on their estimated fair values as of the business combination date, including identifiable intangible assets which either arise from a contractual or legal right or are separable from goodwill. We base the estimated fair value of identifiable intangible assets acquired in a business combination on independent valuations that use information and assumptions provided by our management, which consider our estimates of inputs and assumptions that a market participant would use. Any excess purchase price over the estimated fair value assigned to the net tangible and identifiable intangible assets acquired and liabilities assumed is recorded to goodwill. The use of alternative valuation assumptions, including estimated revenue projections, growth rates, estimated cost savings, cash flows, discount rates, estimated useful lives and probabilities surrounding the achievement of contingent milestones could result in different purchase price allocations and amortization expense in current and future periods.

In circumstances where an acquisition involves a contingent consideration arrangement that meets the definition of a liability under Financial Accounting Standards Board, or FASB, Accounting Standards Codification, or ASC, Topic 480, *Distinguishing Liabilities from Equity*, we recognize a liability equal to the fair value of the

contingent payments we expect to make as of the acquisition date. We remeasure this liability each reporting period and record changes in the fair value as a component of operating expenses.

Transaction costs associated with acquisitions are expensed as incurred in general and administrative expenses. Results of operations and cash flows of acquired companies are included in our operating results from the date of acquisition.

### **Goodwill**

In accordance with ASC 350, *Intangibles - Goodwill and Other*, or ASC 350, we do not amortize goodwill or other intangible assets with indefinite lives but rather test them for impairment. ASC 350 requires us to perform an impairment review of our goodwill balance at least annually, which we do in the fourth quarter of each year for our single consolidated reporting unit, and whenever events or changes in circumstances indicate that the carrying amount of these assets may not be recoverable. We did not incur any goodwill impairment losses in any of the periods presented.

### **Stock-based compensation**

We incur stock-based compensation expense for awards granted to employees and directors and for inducement awards granted in connection with our business acquisitions. Stock-based compensation expense is measured at the date of grant and is based on the estimated fair value of the award. Compensation cost is recognized as expense on a straight-line basis over the vesting period for options and restricted stock unit, or RSU, awards and on an accelerated basis for performance-based restricted stock unit, or PRSU, awards. We recognize stock-based compensation expense associated with PRSU grants when we determine the achievement of performance conditions is probable. In determining the fair value of stock options and Employee Stock Purchase Plan, or ESPP, purchases, we estimate the grant date fair value, and the resulting stock-based compensation expense, using the Black-Scholes option-pricing model. We estimate the grant date fair value of RSU and PRSU awards based on the grant date share price.

The Black-Scholes option-pricing model requires the use of highly subjective assumptions, which determine the fair value of stock-based awards. These assumptions include:

*Expected term*—The expected term represents the period that stock-based awards are expected to be outstanding. We use the simplified method to determine the expected term, which is based on the mid-point between the vesting date and the end of the contractual term.

*Expected volatility*—We estimate expected volatility based on the historical volatility of our common stock over a period equal to the expected term of awards and over the expected six-month term ESPP purchase periods.

*Risk-free interest rate*—The risk-free interest rate is based on the U.S. Treasury zero coupon issues in effect at the time of grant for periods corresponding with the expected term of an option.

*Dividend yield*—We have never paid dividends on our common stock and have no plans to pay dividends on our common stock. Therefore, we used an expected dividend yield of zero.

In addition to the Black-Scholes assumptions, we estimate our forfeiture rate based on an analysis of our actual forfeitures and will continue to evaluate the adequacy of the forfeiture rate based on actual forfeiture experience, analysis of employee turnover behavior and other factors. The impact from any forfeiture rate adjustment would be recognized in full in the period of adjustment and if the actual number of future forfeitures differs from our estimates, we might be required to record adjustments to stock-based compensation in future periods.

We granted approximately \$90.0 million of RSUs under our 2015 Stock Incentive Plan as inducement awards to new employees who joined Invitae in connection with our acquisition of Singular Bio. \$45.0 million of the RSUs are time-based and vest in three equal installments in December 2019, June 2020, and December 2020, subject to the employee's continued service with us ("Time-based RSUs") and \$45.0 million of the RSUs are PRSUs that vest upon the achievement of certain performance conditions over a period of approximately 12 months from the date of acquisition, subject to the employee's continued service with us. These awards are based on a 30-day volume weighted-average share price with a fixed dollar value and therefore are liability-classified and the fair value will be estimated at each reporting period based on the number of shares that are expected to be issued at each reporting date and our closing stock price. Therefore, fair value of the RSUs and PRSUs and the number of shares to be issued will not be fixed until the awards vest.

## Income taxes

We use the asset and liability method of accounting for income taxes. Under this method, deferred tax assets and liabilities are determined based on the differences between the financial reporting and the tax bases of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. A valuation allowance is provided when it is more likely than not that some portion or all of a deferred tax asset will not be realized. Significant judgment is required in determining the net valuation allowance which includes our evaluation of all available evidence including past operating results, estimates on future taxable income and acquisition-related tax assets and liabilities. As of December 31, 2019, we recorded a full valuation allowance on our net deferred tax assets because we expect that it is more likely than not that our deferred tax assets will not be realized in the foreseeable future. Should the actual amounts differ from our estimates, the amount of our valuation allowance could be materially impacted.

## Results of Operations

A discussion regarding our financial condition and results of operations for the year ended December 31, 2019 compared to the year ended December 31, 2018 is presented below. A discussion regarding our financial condition and results of operations for the year ended December 31, 2018 compared to the year ended December 31, 2017 can be found under Part II, Item 7 in our Annual Report on Form 10-K for the year ended December 31, 2018.

## Comparison of the Years Ended December 31, 2019 and 2018

	Year Ended December 31,		Dollar Change	% Change
	2019	2018		
Revenue:				
Test revenue	\$ 212,473	\$ 144,560	\$ 67,913	47%
Other revenue	4,351	3,139	1,212	39%
Total revenue	216,824	147,699	69,125	47%
Cost of revenue	118,103	80,105	37,998	47%
Research and development	141,526	63,496	78,030	123%
Selling and marketing	122,237	74,428	47,809	64%
General and administrative	79,070	52,227	26,843	51%
Loss from operations	(244,112)	(122,557)	(121,555)	99%
Other expense, net	(3,891)	(2,568)	(1,323)	52%
Interest expense	(12,412)	(7,030)	(5,382)	77%
Net loss before taxes	(260,415)	(132,155)	(128,260)	97%
Income tax benefit	(18,450)	(2,800)	(15,650)	559%
Net loss	\$ (241,965)	\$ (129,355)	\$ (112,610)	87%

## Revenue

The increase in revenue of \$69.1 million for the year ended December 31, 2019 compared to the same period in 2018 was due primarily to increased test volume from growth in our business. Billable test volumes increased to approximately 469,000 during the year ended December 31, 2019 compared to 292,000 in the same period in 2018, an increase of 61%. Average revenue per test decreased to \$453 per test during the year ended December 31, 2019 compared to \$495 in the same period in 2018, primarily due to changes in payer and product mix, as well as reductions in pricing for some payers as we focus on providing cost effective genetic testing.

## Cost of revenue

The increase in the cost of revenue of \$38.0 million for the year ended December 31, 2019 compared to the same period in 2018 was primarily due to costs associated with increased test volume partially offset by the effect of cost efficiencies. For the year ended December 31, 2019, the number of samples accessioned increased to approximately 482,000 from approximately 303,000 for the same period in 2018. Cost per sample accessioned was \$245 in 2019 compared to \$264 in 2018. The cost per sample accessioned decreased primarily due to increased volume which resulted in lower labor costs, production improvements which resulted in material efficiencies and

automation and software improvements which reduced the medical interpretation time per report, which were partially offset by an increase in amortization of acquired intangible assets of \$4.4 million.

#### *Research and development*

The increase in research and development expense of \$78.0 million for the year ended December 31, 2019 compared to the same period in 2018 was due to growth in the business and the effect of business acquisitions in 2019 and principally consisted of increases in personnel-related costs of \$77.4 million, reflecting increased headcount as well as \$39.1 million of stock-based compensation related to inducement equity awards granted to employees who joined Invitae in connection with our acquisition of Singular Bio; increase in information technology costs by \$3.5 million due to increased spending on networking equipment and software licenses; increase in travel-related costs of \$1.3 million due to increased headcount; and a \$1.0 million increase in professional fees. These cost increases were partially offset by a decrease of \$2.7 million of amortization of intangible assets associated with business acquisitions and a net increase of \$2.0 million in allocations of resources from research and development to cost of revenue to support the increase in production volumes.

#### *Selling and marketing*

The increase in selling and marketing expenses of \$47.8 million for the year ended December 31, 2019 compared to the same period in 2018 was due to growth in the business and increased spending on marketing and branding initiatives and principally consisted of the following elements: increases in personnel costs of \$27.6 million due to increases in headcount; marketing costs, principally for branding initiatives and advertising, increased by \$9.9 million; increase of \$3.7 million in allocations from other functional areas, increase in travel expenses of \$3.6 million due to our growing sales force; and an increase in information technology costs by \$2.0 million.

#### *General and administrative*

The increase in general and administrative expenses of \$26.8 million for the year ended December 31, 2019 compared to the same period in 2018 was primarily due to the growth of the business, including increased headcount, and the effect of business acquisitions in 2019 and principally consisted of the following elements: personnel-related costs increased by \$12.2 million primarily due to increases in headcount; \$8.2 million acquisition-related expense incurred in 2019 with no comparable expense in 2018, which includes \$6.8 million of post-combination expense related to the acceleration of unvested equity from our 2019 business acquisitions; professional fees increased by \$4.0 million principally due to the utilization of outside consultants to augment existing staff; occupancy costs increased by \$4.0 million primarily related to facilities costs for increased space; legal and accounting costs increased by \$3.5 million; information technology costs increased by \$3.3 million due primarily to computer equipment and software purchases to support headcount growth; and travel expenses increased by \$2.2 million due to increases in headcount.

These cost increases were offset by increased allocations of technology and facilities-related expenses to other functional areas of \$7.6 million, by \$2.9 million of losses related to our collaboration agreement with a private company in 2018 with no similar expense in 2019, and by a decrease in right of first refusal payments of \$0.6 million.

#### *Other expense, net*

The increase in other expense, net of \$1.3 million for the year ended December 31, 2019 compared to the same period in 2018 was principally due to a loss on extinguishment of debt of \$8.9 million recorded in 2019 related to the settlement of our 2018 Note Purchase Agreement in September 2019 as compared to a loss on extinguishment of debt of \$5.3 million recorded in November 2018 related to our 2017 Loan Agreement. This was partially offset by increases in interest income of \$3.7 million and a gain on remeasurement of an acquisition-related liability from AltaVoice of \$1.6 million in the first quarter of 2018 with no similar gains in 2019.

#### *Interest expense*

The increase in interest expense of \$5.4 million for the year ended December 31, 2019 compared to the same period in 2018 was due principally to increased borrowings under our debt facilities as compared to the prior year period. See Note 8, "Commitments and contingencies" in Notes to Consolidated Financial Statements in Part II, Item 8 of this Annual Report.

### *Income tax benefit*

The increase in income tax benefit of \$15.7 million for the year ended December 31, 2019 compared to the same period in 2018 was due to net deferred tax liabilities assumed in connection with our acquisitions of Singular Bio, Jungla, and Clear Genetics which provided a future source of income to support the realization of our deferred tax assets and resulted in a partial release of our valuation allowance, partially offset by \$2.8 million realized during 2018 resulting from our acquisition of CombiMatrix. As the short period tax returns for our 2019 acquisitions have not yet been filed, material changes to the tax returns may have a material impact on the net deferred tax liabilities assumed in connection with the acquisitions and the related income tax benefit.

### **Liquidity and capital resources**

#### ***Liquidity and capital expenditures***

We have incurred net losses since our inception. For the years ended December 31, 2019, 2018 and 2017, our net losses were \$242.0 million, \$129.4 million and \$123.4 million, respectively, and we expect to incur additional losses in the near term. At December 31, 2019, we had an accumulated deficit of \$758.7 million. While our revenue has increased over time, we may never achieve revenue sufficient to offset our expenses.

Since inception, our operations have been financed primarily by net proceeds from sales of our capital stock, fees collected from our customers as well as borrowing from debt facilities.

In March 2019, we issued, in an underwritten public offering, an aggregate of 10.4 million shares of our common stock at a price of \$19.00 per share, for gross proceeds of \$196.7 million and net proceeds of \$184.5 million. During 2019, we issued 0.8 million shares of common stock under our 2018 Sales Agreement at an average price of \$25.71 per share in an "at the market" offering for aggregate proceeds of \$20.2 million and net proceeds of \$19.5 million.

In September 2019, we issued \$350.0 of aggregate principal amount of Convertible Senior Notes which bear cash interest at a rate of 2.0% per year. Also in September 2019, we used the funds received through the issuance of our Convertible Senior Notes to settle our Note Purchase Agreement we entered into in November 2018.

At December 31, 2019 and 2018, we had \$398.0 million and \$131.9 million, respectively, of cash, cash equivalents, restricted cash and marketable securities.

Our primary uses of cash are to fund our operations as we continue to grow our business, enter into partnerships and acquire businesses and technologies. Cash used to fund operating expenses is affected by the timing of when we pay expenses, as reflected in the change in our outstanding accounts payable and accrued expenses. We estimate our capital expenditures will be approximately \$24.0 million for 2020.

We have incurred substantial losses since our inception, and we expect to continue to incur losses in the near term. We believe our existing cash, cash equivalents and marketable securities as of December 31, 2019 and fees collected from the sale of our tests will be sufficient to meet our anticipated cash requirements for the foreseeable future.

We may need additional funding to finance operations prior to achieving profitability or should we make additional acquisitions. We regularly consider fundraising opportunities and will determine the timing, nature and size of future financings based upon various factors, including market conditions and our operating plans. We may in the future elect to finance operations by selling equity or debt securities or borrowing money. We also may elect to finance future acquisitions. If we issue equity securities, dilution to stockholders may result. Any equity securities issued may also provide for rights, preferences or privileges senior to those of holders of our common stock. If we raise funds by issuing additional debt securities, these debt securities would have rights, preferences and privileges senior to those of holders of our common stock. In addition, the terms of additional debt securities or borrowings could impose significant restrictions on our operations. If additional funding is required, there can be no assurance that additional funds will be available to us on acceptable terms on a timely basis, if at all. If we are unable to obtain additional funding when needed, we will need to curtail planned activities to reduce costs. Doing so will likely have an unfavorable effect on our ability to execute on our business plan and have an adverse effect on our business, results of operations and future prospects.

The following table summarizes our cash flows (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Cash used in operating activities	\$ (145,053)	\$ (92,220)	\$ (97,981)
Cash provided by (used in) investing activities	(280,310)	35,773	(36,953)
Cash provided by financing activities	464,771	157,152	80,871
Net increase (decrease) in cash, cash equivalents and restricted cash	\$ 39,408	\$ 100,705	\$ (54,063)

#### **Cash flows from operating activities**

For the year ended December 31, 2019, cash used in operating activities of \$145.1 million principally resulted from our net loss of \$242.0 million and \$18.5 million related to our income tax benefit generated from business combinations completed in 2019 offset by non-cash charges of \$75.9 million for stock-based compensation, \$16.2 million for depreciation and amortization, \$8.9 million for debt extinguishment costs related to the settlement of our 2018 Note Purchase Agreement and \$1.1 million of other adjustments. The net effect on cash for changes in net operating assets was a use of cash of \$8.8 million due principally to increases in accrued liabilities which include acquisition-related liabilities for 2019 business acquisitions partially offset by increases in accounts receivable due to timing of collections and increases in prepaid expenses and other current assets.

For the year ended December 31, 2018, cash used in operating activities of \$92.2 million principally resulted from our net loss of \$129.4 million offset by non-cash charges of \$20.9 million for stock-based compensation, \$13.5 million for depreciation and amortization, \$5.3 million related to debt extinguishment costs, \$2.9 million of impairment losses related to a collaboration agreement, \$0.8 million of other non-cash adjustments and \$0.4 million for remeasurements of liabilities associated with business combinations, all partially offset by a \$2.9 million benefit from income taxes resulting from the completion of our analysis of historical net operating losses for CombiMatrix. The net effect on cash of changes in net operating assets was a use of cash of \$3.8 million due principally to the effect of increase in accounts receivable due to timing of collections partially offset by an increase in accrued and other liabilities.

For the year ended December 31, 2017, cash used in operating activities of \$98.0 million principally resulted from our net loss of \$123.4 million and non-cash income tax benefits offset by non-cash charges of \$19.2 million for stock-based compensation, \$9.2 million for depreciation and amortization and \$1.8 million for remeasurements of liabilities associated with business combinations. The net effect on cash of changes in net operating assets was a use of cash of \$3.4 million due principally to the effect of increase in accounts receivable.

#### **Cash flows from investing activities**

For the year ended December 31, 2019, cash used in investing activities of \$280.3 million resulted primarily from purchases of marketable securities exceeding proceeds from maturities and sales of marketable securities by \$226.4 million, net cash used to acquire Singular Bio, Jungla, and Clear Genetics of \$33.8 million and purchases of property and equipment of \$20.0 million.

For the year ended December 31, 2018, cash provided by investing activities of \$35.8 million resulted primarily from proceeds from maturities and sales of marketable securities exceeding purchases of marketable securities by \$42.7 million and purchases of property and equipment of \$6.0 million.

For the year ended December 31, 2017, cash used in investing activities of \$37.0 million resulted primarily from purchases of marketable securities exceeding proceeds from maturities of marketable securities by \$33.1 million and purchases of property and equipment of \$6.7 million, partially offset by \$2.8 million cash acquired from acquisition of businesses.

#### **Cash flows from financing activities**

For the year ended December 31, 2019, cash provided by financing activities of \$464.8 million consisted of net proceeds from the issuance of Convertible Senior Notes of \$339.9 million, net proceeds from the public offerings of common stock of \$204.0 million and cash received from issuances of common stock totaling \$9.5 million, including cash received from exercises of stock options of \$3.5 million and employee stock plan purchases of \$5.8 million. These cash inflows were partially offset by payments related to the settlement of our Note Purchase Agreement through repayment of loan obligations of \$75.0 million and payment of debt extinguishment costs of \$10.6 million, as well as finance lease payments of \$2.1 million.

For the year ended December 31, 2018, cash provided by financing activities of \$157.2 million consisted of net proceeds from the public offerings of common stock of \$112.4 million, net proceeds of \$93.9 million from the second term loan under the Amended 2017 Loan Agreement and from the 2018 Note Purchase Agreement, and cash received from issuances of common stock totaling \$17.5 million (which includes \$6.5 million received from exercises of warrants issued pursuant to the acquisition of CombiMatrix (see Note 4, “Business combinations,” in the Notes to Consolidated Financial Statements included elsewhere in this report), \$5.0 million received pursuant to the Securities Purchase Agreement entered into in connection with our 2018 Note Purchase Agreement, employee stock purchases of \$3.2 million, and stock option exercises of \$2.7 million). These cash inflows were partially offset by loan payments of \$60.0 million to extinguish our 2017 Loan Agreement, payments of \$4.6 million related to the extinguishment of our 2017 Loan Agreement and related amendments and capital lease payments of \$2.1 million.

For the year ended December 31, 2017, cash provided by financing activities of \$80.9 million consisted of net proceeds of \$68.9 million from a private placement, net proceeds of \$39.7 million from an initial term loan under the 2017 Loan Agreement and cash received from employee stock plan purchases, exercises of stock options and exercises of warrants totaling \$5.7 million. These cash inflows were partially offset by a cash payment of \$18.4 million to settle loan obligations assumed in the Good Start acquisition, other loan payments of \$12.1 million and capital lease obligations payments of \$3.0 million.

### Contractual obligations

The following table summarizes our contractual obligations, including interest, as of December 31, 2019 (in thousands):

Contractual obligations:	2020	2021 and 2022	2023 and 2024	2025 and beyond	Total
Operating leases	\$ 10,156	\$ 20,314	\$ 19,947	\$ 18,238	\$ 68,655
Finance leases	1,963	1,217	—	—	3,180
Convertible Senior Notes	—	—	350,000	—	350,000
Purchase commitments	3,278	1,105	—	—	4,383
<b>Total</b>	<b>\$ 15,397</b>	<b>\$ 22,636</b>	<b>\$ 369,947</b>	<b>\$ 18,238</b>	<b>\$ 426,218</b>

See Note 8, “Commitments and contingencies” in Notes to Consolidated Financial Statements in Part II, Item 8 of this Annual Report for additional details regarding our leases, Convertible Senior Notes and purchase commitments.

### Off-balance sheet arrangements

We have not entered into any off-balance sheet arrangements.

### Recent accounting pronouncements

See “Recent accounting pronouncements” in Note 2, “Summary of significant accounting policies” in the Notes to Consolidated Financial Statements for a discussion of recently adopted accounting pronouncements and accounting pronouncements not yet adopted, and their expected effect on our financial position and results of operations.

### ITEM 7A. Quantitative and Qualitative Disclosures about Market Risk.

We are exposed to market risks in the ordinary course of our business. These risks primarily relate to interest rates. Our cash, cash equivalents, restricted cash and marketable securities totaled \$398.0 million at December 31, 2019, and consisted of bank deposits, money market funds, U.S. treasury notes, and U.S. government agency securities. Such interest-bearing instruments carry a degree of risk; however, because our investments are primarily high-quality credit instruments with short-term in durations with high-quality institutions, we have not been exposed to, nor do we anticipate being exposed to, material risks due to changes in interest rates. At December 31, 2019, a hypothetical 1% (100 basis points) increase or decrease in interest rates would not have resulted in a material change in the fair value of our cash equivalents and portfolio of marketable securities. Fluctuations in the value of our cash equivalents and portfolio of marketable securities caused by a change in interest rates (gains or losses on the carrying value) are recorded in other comprehensive gain (loss) and are realized only if we sell the underlying securities prior to maturity or declines in fair value are determined to be other-than-temporary.

Although our Convertible Senior Notes are based on a fixed rate, changes in interest rates could impact the fair market value. As of December 31, 2019, the fair market value of the Convertible Senior Notes was \$319.0 million.

For additional information about the Convertible Senior Notes, see Note 8, “Commitments and contingencies” in Notes to Consolidated Financial Statements in Part II, Item 8 of this Annual Report.



**ITEM 8. Consolidated Financial Statements and Supplementary Data.**

**Index to Consolidated Financial Statements**

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## Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors of Invitae Corporation

### Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Invitae Corporation (the Company) as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive loss, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes (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 three years in the period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 28, 2020 expressed an unqualified opinion thereon.

### Adoption of ASU No. 2014-09

As discussed in Note 2 to the consolidated financial statements, the Company changed its method of accounting for revenue in 2018 due to the adoption of Accounting Standards Update (ASU) No. 2014-09, Revenue from Contracts with Customers (Topic 606), and the related amendments.

### Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the 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 financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the 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 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 financial statements. We believe that our audits provide a reasonable basis for our opinion.

### Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

### **Measurement of test revenue**

*Description of the Matter* During the year ended December 31, 2019, the Company's test revenue was \$212.5 million. As discussed in Note 3 of the consolidated financial statements, test revenue is recognized when the performance obligation is complete, generally upon delivery of the underlying clinical report or when the report is made available to the customer on the Company's website. Auditing the measurement of the Company's test revenue was complex and judgmental due to the significant estimation required in determining the amount that would be collected for each test. In particular, the estimate of revenue for tests billed to insurance carriers is affected by assumptions in payer behavior such as changes in historical payment patterns, contract provisions and government and private insurance reimbursement policies.

*How We Addressed the Matter in Our Audit* We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's revenue recognition process. As part of our testing, we considered controls over management's review of the significant assumptions and inputs used in the determination of the expected amount. We also tested controls used by management to compare the current and historical data used in making the estimates for completeness and accuracy.

Our audit procedures over the Company's test revenue included, among others, assessing valuation methodologies and models and testing the significant assumptions above and the underlying data used by the Company in its analysis. We agreed transactions selected for testing back to the actual customer contract terms. We compared the significant assumptions above and inputs used by management to changes in the Company's contracted rates, government and private insurance payer collection trends, and other relevant factors. We assessed the historical accuracy of the cash collections used in the Company's revenue models and assessed the completeness of adjustments to estimates of future cash collections as a result of significant contract amendments, changes in collection trends and changes in payer behavior.

### **Valuation of intangible assets associated with business acquisitions**

*Description of the Matter* As described in Note 4 to the consolidated financial statements, the Company completed three business acquisitions during 2019. As a result of the acquisitions, the Company recorded goodwill of \$76.7 million, and intangible assets of \$102.4 million. The acquisitions were accounted for as business combinations.

Auditing the Company's accounting for the acquisitions was challenging as the determination of the fair value of the intangible assets acquired required management to make subjective estimates and assumptions. The valuation of the intangible assets is subject to higher estimation uncertainty due to management's judgments in determining significant assumptions that included assumed revenue growth rates, estimated cost savings and discount rates. Changes in these significant assumptions could have a significant effect on the fair value of the intangible assets.

*How We Addressed the Matter in Our Audit* We tested the design and operating effectiveness of internal controls over the Company's process for accounting for acquisitions. For example, we tested controls over management's review of the valuation of intangible assets, including the review of the valuation model and significant assumptions used in the valuation.

Our audit procedures related to the valuation of intangible assets included the following, among others, utilizing a valuation specialist to assist in evaluating the appropriateness of the Company's valuation models and evaluating the reasonableness of significant assumptions used including the revenue growth rate, cost savings and the discount rates as compared to industry and market data and historical results. We also evaluated whether the assumptions used were reasonable by comparing them to the past performance of past acquisitions, current industry data, current market forecasts, and whether such assumptions were consistent with evidence obtained in other areas of the audit.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2013.

Redwood City, California  
February 28, 2020

**INVITAE CORPORATION**

**Consolidated Balance Sheets**  
(in thousands, except par value data)

	December 31,	
	2019	2018
<b>Assets</b>		
Current assets:		
Cash and cash equivalents	\$ 151,389	\$ 112,158
Marketable securities	240,436	13,727
Accounts receivable	32,541	26,296
Prepaid expenses and other current assets	18,032	13,258
Total current assets	442,398	165,439
Property and equipment, net	37,747	27,886
Operating lease assets	36,640	—
Restricted cash	6,183	6,006
Intangible assets, net	125,175	30,469
Goodwill	126,777	50,095
Other assets	6,681	3,064
Total assets	\$ 781,601	\$ 282,959
<b>Liabilities and stockholders' equity</b>		
Current liabilities:		
Accounts payable	\$ 10,321	\$ 7,812
Accrued liabilities	64,814	26,563
Operating lease obligation	4,870	—
Finance lease obligation	1,855	1,937
Total current liabilities	81,860	36,312
Operating lease obligation, net of current portion	42,191	—
Finance lease obligation, net of current portion	1,155	1,375
Debt	—	74,477
Convertible senior notes, net	268,755	—
Other long-term liabilities	8,000	8,956
Total liabilities	401,961	121,120
Commitments and contingencies (Note 8)		
Stockholders' equity:		
Preferred stock, \$0.0001 par value: 20,000 shares authorized; 125 and 3,459 shares issued and outstanding as of December 31, 2019 and 2018, respectively	—	—
Common stock, \$0.0001 par value: 400,000 shares authorized; 98,796 and 75,481 shares issued and outstanding as of December 31, 2019 and 2018, respectively	10	8
Accumulated other comprehensive loss	(9)	(5)
Additional paid-in capital	1,138,316	678,548
Accumulated deficit	(758,677)	(516,712)
Total stockholders' equity	379,640	161,839
Total liabilities and stockholders' equity	\$ 781,601	\$ 282,959

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

**INVITAE CORPORATION**

**Consolidated Statements of Operations**  
(in thousands, except per share data)

	Year Ended December 31,		
	2019	2018	2017
Revenue:			
Test revenue	\$ 212,473	\$ 144,560	\$ 65,169
Other revenue	4,351	3,139	3,052
Total revenue	216,824	147,699	68,221
Cost of revenue	118,103	80,105	50,142
Research and development	141,526	63,496	46,469
Selling and marketing	122,237	74,428	53,417
General and administrative	79,070	52,227	39,472
Loss from operations	(244,112)	(122,557)	(121,279)
Other expense, net	(3,891)	(2,568)	(303)
Interest expense	(12,412)	(7,030)	(3,654)
Net loss before taxes	(260,415)	(132,155)	(125,236)
Income tax benefit	(18,450)	(2,800)	(1,856)
Net loss	\$ (241,965)	\$ (129,355)	\$ (123,380)
Net loss per share, basic and diluted	\$ (2.66)	\$ (1.94)	\$ (2.65)
Shares used in computing net loss per share, basic and diluted	90,859	66,747	46,512

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

INVITAE CORPORATION

Consolidated Statements of Comprehensive Loss  
(in thousands)

	Year Ended December 31,		
	2019	2018	2017
Net loss	\$ (241,965)	\$ (129,355)	\$ (123,380)
Other comprehensive income (loss):			
Unrealized income (loss) on available-for-sale marketable securities, net of tax	(4)	166	(171)
Comprehensive loss	<u>\$ (241,969)</u>	<u>\$ (129,189)</u>	<u>\$ (123,551)</u>

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

**INVITAE CORPORATION**

**Consolidated Statements of Stockholders' Equity**  
(in thousands)

	Year Ended December 31,		
	2019	2018	2017
<b>Common stock:</b>			
Balance, beginning of period	\$ 8	\$ 5	\$ 4
Common stock issued	2	3	1
Balance, end of period	10	8	5
<b>Accumulated other comprehensive loss:</b>			
Balance, beginning of period	(5)	(171)	—
Unrealized income (loss) on available-for-sale marketable securities, net of tax	(4)	166	(171)
Balance, end of period	(9)	(5)	(171)
<b>Additional paid-in capital:</b>			
Balance, beginning of period	678,548	520,558	374,288
Common stock issued in private placement, net	—	—	68,896
Common stock issued in connection with public offering, net	204,024	112,438	—
Common stock issued on exercise of stock options, net	3,456	2,741	1,706
Common stock issued pursuant to exercises of warrants	181	6,539	1,381
Common stock issued pursuant to employee stock purchase plan	5,833	3,231	2,635
Common stock issued or issuable pursuant to business combinations	133,942	6,455	50,808
Equity component of convertible senior notes, net	75,488	—	—
Warrants issued pursuant to loan agreement	—	383	740
Common stock issued pursuant to securities purchase agreement	—	5,353	—
Stock-based compensation expense	36,844	20,850	18,832
Other	—	—	1,272
Balance, end of period	1,138,316	678,548	520,558
<b>Accumulated deficit:</b>			
Balance, beginning of period	(516,712)	(398,598)	(275,218)
Cumulative effect of accounting change	—	11,241	—
Net loss	(241,965)	(129,355)	(123,380)
Balance, end of period	(758,677)	(516,712)	(398,598)
<b>Total stockholders' equity</b>	<b>\$ 379,640</b>	<b>\$ 161,839</b>	<b>\$ 121,794</b>

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

**INVITAE CORPORATION**

**Consolidated Statements of Cash Flows**  
(in thousands)

	Year Ended December 31,		
	2019	2018	2017
<b>Cash flows from operating activities:</b>			
Net loss	\$ (241,965)	\$ (129,355)	\$ (123,380)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	16,206	13,540	9,181
Stock-based compensation	75,948	20,850	19,221
Amortization of debt discount and issuance costs	4,416	—	—
Impairment losses	—	2,925	—
Benefit from income taxes	(18,450)	(2,862)	(1,856)
Debt extinguishment costs	8,926	5,266	—
Other	1,095	1,168	2,214
Changes in operating assets and liabilities, net of businesses acquired:			
Accounts receivable	(6,131)	(5,291)	(1,963)
Prepaid expenses and other current assets	(4,979)	(1,445)	(641)
Other assets	2,026	(163)	(185)
Accounts payable	1,558	(417)	(535)
Accrued expenses and other liabilities	16,297	3,564	(37)
Net cash used in operating activities	<u>(145,053)</u>	<u>(92,220)</u>	<u>(97,981)</u>
<b>Cash flows from investing activities:</b>			
Purchases of marketable securities	(260,917)	(9,680)	(101,867)
Proceeds from sales of marketable securities	—	19,965	—
Proceeds from maturities of marketable securities	34,500	32,458	68,768
Acquisition of businesses, net of cash acquired	(33,846)	—	2,821
Purchases of property and equipment	(20,047)	(5,970)	(6,675)
Other	—	(1,000)	—
Net cash provided by (used in) investing activities	<u>(280,310)</u>	<u>35,773</u>	<u>(36,953)</u>
<b>Cash flows from financing activities:</b>			
Proceeds from public offerings of common stock, net of issuance costs	204,024	112,441	—
Proceeds from issuance of common stock, net	9,470	17,511	74,619
Proceeds from issuance of convertible senior notes, net	339,900	—	—
Proceeds from issuance of debt, net	—	93,909	39,661
Payments of debt extinguishment costs	(10,638)	(4,609)	—
Loan payments	(75,000)	(60,000)	(30,457)
Finance lease principal payments	(2,075)	(2,100)	(2,952)
Other	(910)	—	—
Net cash provided by financing activities	<u>464,771</u>	<u>157,152</u>	<u>80,871</u>
<b>Net increase (decrease) in cash, cash equivalents and restricted cash</b>	<b>39,408</b>	<b>100,705</b>	<b>(54,063)</b>
<b>Cash, cash equivalents and restricted cash at beginning of period</b>	<b>118,164</b>	<b>17,459</b>	<b>71,522</b>
<b>Cash, cash equivalents and restricted cash at end of period</b>	<b>\$ 157,572</b>	<b>\$ 118,164</b>	<b>\$ 17,459</b>
<b>Supplemental cash flow information:</b>			
Interest paid	\$ 4,731	\$ 6,231	\$ 2,852
<b>Supplemental cash flow information of non-cash investing and financing activities:</b>			
Equipment acquired through finance leases	\$ 1,892	\$ —	\$ 6,789
Purchases of property and equipment in accounts payable and accrued liabilities	\$ 2,422	\$ 510	\$ 200
Amounts related to co-development agreement in other assets and accrued liabilities	\$ —	\$ 2,000	\$ —
Warrants issued pursuant to 2017 Loan Agreement	\$ —	\$ 383	\$ 740
Common stock issued for acquisition of businesses	\$ 108,573	\$ 6,445	\$ 50,808
Consideration payable for acquisition of businesses	\$ 21,449	\$ —	\$ 13,276



Common stock issued to settle assumed liabilities	\$	—	\$	—	\$	1,272
Operating lease assets obtained in exchange for lease obligations, net	\$	4,261	\$	—	\$	—

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

# INVITAE CORPORATION

## Notes to Consolidated Financial Statements

### 1. Organization and description of business

Invitae Corporation ("Invitae," "the Company," "we," "us," and "our") was incorporated in the State of Delaware on January 13, 2010, as Locus Development, Inc. and changed its name to Invitae Corporation in 2012. We utilize an integrated portfolio of laboratory processes, software tools and informatics capabilities to process DNA-containing samples, analyze information about patient-specific genetic variation and generate test reports for clinicians and patients. Our headquarters and main production facility is located in San Francisco, California. We currently have more than 20,000 genes in production and provide a variety of diagnostic tests that can be used in multiple indications. We offer genetic testing across multiple clinical areas, including hereditary cancer, cardiology, neurology, pediatrics, metabolic conditions and rare diseases. To augment our offering and realize our mission, we have acquired multiple assets including four businesses in 2017, which expanded our suite of genome management offerings and provided our entry into prenatal and perinatal genetic testing. To complement these, in the first quarter of 2019, we introduced our Non-invasive Prenatal Screen ("NIPS") and to advance this offering, in June 2019, we acquired Singular Bio, Inc. ("Singular Bio") to lower costs associated with NIPS. In July 2019, we acquired Jungla Inc. ("Jungla") to further enhance our genetic variant interpretation and in November 2019, to expand our ability to scale and deliver genetic information, we acquired Clear Genetics, Inc. ("Clear Genetics"). Invitae operates in one segment.

### 2. Summary of significant accounting policies

#### *Principles of consolidation*

Our consolidated financial statements include our accounts and the accounts of our wholly-owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

#### *Use of estimates*

The preparation of financial statements in conformity with U.S. GAAP requires management to make judgments, estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent liabilities as of the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. We base these estimates on current facts, historical and anticipated results, trends and various other assumptions that we believe are reasonable under the circumstances, including assumptions as to future events. Actual results could differ materially from those judgments, estimates and assumptions. We evaluate our estimates on an ongoing basis.

Significant estimates and assumptions made by management include the determination of:

- revenue recognition (See Note 3, "Revenue, accounts receivable and deferred revenue" for further information);
- the fair value of assets and liabilities associated with business combinations;
- the impairment assessment of goodwill and intangible assets;
- valuation of our 2.00% convertible senior notes due 2024 issued in September 2019 ("Convertible Senior Notes");
- the recoverability of long-lived assets;
- our incremental borrowing rates used to calculate our lease balances;
- stock-based compensation expense and the fair value of awards issued; and
- income tax uncertainties.

#### *Concentrations of credit risk and other risks and uncertainties*

Financial instruments that potentially subject us to a concentration of credit risk consist of cash, cash equivalents, marketable securities and accounts receivable. Our cash and cash equivalents are held by financial institutions in the United States. Such deposits may exceed federally insured limits.

Significant customers are those that represent 10% or more of our total revenue for each year presented on the statements of operations. Revenue for significant customers as a percentage of total revenue were as follows:

<b>Customers</b>	<b>Year Ended December 31,</b>		
	<b>2019</b>	<b>2018</b>	<b>2017</b>
Medicare	25%	22%	13%

No customers represented more than 10% of accounts receivable as of December 31, 2019, and Medicare represented 21% of accounts receivable as of December 31, 2018.

#### **Cash, cash equivalents, and restricted cash**

We consider all highly liquid investments with original maturities of three months or less from the date of purchase to be cash equivalents. Cash equivalents consist primarily of amounts invested in money market funds, U.S. treasury notes and government agency securities.

Restricted cash consists primarily of money market funds that secure irrevocable standby letters of credit that serve as collateral for security deposits for our facility leases.

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the consolidated balance sheets that sum to the total of the same amounts shown in the statements of cash flows (in thousands):

	<b>December 31, 2019</b>	<b>December 31, 2018</b>
Cash and cash equivalents	\$ 151,389	\$ 112,158
Restricted cash	6,183	6,006
Total cash, cash equivalents and restricted cash	\$ 157,572	\$ 118,164

#### **Marketable securities**

All marketable securities have been classified as "available-for-sale" and are carried at estimated fair value as determined based upon quoted market prices or pricing models for similar securities. Management determines the appropriate classification of its marketable debt securities at the time of purchase and reevaluates such designation at each balance sheet date. Short-term marketable securities have maturities one year or less at the balance sheet date. Unrealized gains and losses are excluded from earnings and are reported as a component of other comprehensive loss. Realized gains and losses and declines in fair value judged to be other than temporary, if any, on available-for-sale securities are included in other expense, net. The cost of securities sold is based on the specific-identification method. Interest on marketable securities is included in other expense, net.

#### **Accounts receivable**

We receive payment for our tests from partners, patients, institutional customers and third-party payers. See Note 3, "Revenue, accounts receivable and deferred revenue" for further information.

#### **Inventory**

We maintain test reagents and other consumables primarily used in sample collection kits which are valued at the lower of cost or net realizable value. Cost is determined using actual costs on a first-in, first-out basis. Our inventory was \$6.6 million and \$8.3 million as of December 31, 2019 and 2018, respectively, and was recorded in prepaid expenses and other current assets in our consolidated balance sheets.

#### **Business combinations**

We apply Accounting Standards Codification ("ASC") 805, *Business Combinations*, or ASC 805, which requires recognition of assets acquired, liabilities assumed, and contingent consideration at their fair value on the acquisition date with subsequent changes recognized in earnings; requires acquisition-related expenses and restructuring costs to be recognized separately from the business combination and expensed as incurred; requires in-process research and development to be capitalized at fair value as an indefinite-lived intangible asset until completion or abandonment; and requires that changes in accounting for deferred tax asset valuation allowances and acquired income tax uncertainties after the measurement period be recognized as a component of provision for taxes.

We account for acquisitions of entities that include inputs and processes and have the ability to create outputs as business combinations. The tangible and identifiable intangible assets acquired and liabilities assumed in a business combination are recorded based on their estimated fair values as of the business combination date, including identifiable intangible assets which either arise from a contractual or legal right or are separable from goodwill. We base the estimated fair value of identifiable intangible assets acquired in a business combination on independent valuations that use information and assumptions provided by our management, which consider our estimates of inputs and assumptions that a market participant would use. Any excess purchase price over the estimated fair value assigned to the net tangible and identifiable intangible assets acquired and liabilities assumed is recorded to goodwill. The use of alternative valuation assumptions, including estimated revenue projections, growth rates, estimated cost savings, cash flows, discount rates, estimated useful lives and probabilities surrounding the achievement of contingent milestones could result in different purchase price allocations and amortization expense in current and future periods.

In circumstances where an acquisition involves a contingent consideration arrangement that meets the definition of a liability under ASC Topic 480, *Distinguishing Liabilities from Equity*, we recognize a liability equal to the fair value of the contingent payments we expect to make as of the acquisition date. We remeasure this liability each reporting period and record changes in the fair value as a component of operating expenses.

Transaction costs associated with acquisitions are expensed as incurred in general and administrative expenses. Results of operations and cash flows of acquired companies are included in our operating results from the date of acquisition.

### ***Intangible assets***

Amortizable intangible assets include trade names, non-compete agreements, developed technology and customer relationships acquired as part of business combinations. Customer relationships are amortized on an accelerated basis, utilizing free cash flows, over periods ranging from five to 11 years. All other intangible assets subject to amortization are amortized using the straight-line method over their estimated useful lives ranging from two to 15 years. All intangible assets subject to amortization are reviewed for impairment in accordance with ASC 360, *Property, Plant and Equipment*.

### ***Goodwill***

In accordance with ASC 350, *Intangibles-Goodwill and Other* ("ASC 350"), our goodwill is not amortized but is tested for impairment on an annual basis or whenever events or changes in circumstances indicate that the carrying amount of these assets may not be recoverable. Under ASC 350, we perform annual impairment reviews of our goodwill balance during the fourth fiscal quarter or more frequently if business factors indicate. In testing for impairment, we compare the fair value of our reporting unit to its carrying value including the goodwill of that unit. If the carrying value, including goodwill, exceeds the reporting unit's fair value, we will recognize an impairment loss for the amount by which the carrying amount exceeds the reporting unit's fair value. The loss recognized cannot exceed the total amount of goodwill allocated to that reporting unit. We did not incur any goodwill impairment losses in any of the periods presented.

### ***In-process research and development***

Intangible assets related to in-process research and development costs ("IPR&D") are considered to be indefinite-lived until the completion or abandonment of the associated research and development efforts. If and when development is complete, the associated assets would be deemed finite-lived and would then be amortized based on their respective estimated useful lives at that point in time. During this period, the assets will not be amortized but will be tested for impairment on an annual basis and between annual tests if we become aware of any events occurring or changes in circumstances that would indicate a reduction in the fair value of the IPR&D projects below their respective carrying amounts.

During the fourth quarter and if business factors indicate more frequently, we perform an assessment of the qualitative factors affecting the fair value of our IPR&D projects. If the fair value exceeds the carrying value, there is no impairment. Impairment losses on indefinite-lived intangible assets are recognized based solely on a comparison of the fair value of an asset to its carrying value, without consideration of any recoverability test. We have not identified any such impairment losses to date.

## **Leases**

Under ASC 842, *Leases*, we determine if an arrangement is a lease at inception. Operating leases are included in operating lease assets and operating lease obligations in our consolidated balance sheets. Finance leases are included in other assets and finance lease obligations in our consolidated balance sheets.

Lease assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease assets and liabilities are recognized at commencement based on the present value of lease payments over the lease term. We generally use our incremental borrowing rate based on the estimated rate of interest for collateralized borrowing over a similar term of the lease payments. The operating lease asset also includes any lease payments made and excludes lease incentives. Our lease terms may include options to extend or terminate the lease which are recognized when it is reasonably certain that we will exercise that option. Lease expense for lease payments is recognized on a straight-line basis over the lease terms, or in some cases, the useful life of the underlying asset.

## **Property and equipment, net**

Property and equipment are stated at cost less accumulated depreciation and amortization. Depreciation is computed using the straight-line method over the estimated useful lives of the assets, generally between three and seven years. Leasehold improvements are amortized using the straight-line method over the shorter of the estimated useful life of the asset or the term of the lease. Maintenance and repairs are charged to expense as incurred, and improvements and betterments are capitalized. When assets are retired or otherwise disposed of, the cost and accumulated depreciation are removed from the balance sheet and any resulting gain or loss is reflected in the statements of operations in the period realized.

The estimated useful lives of property and equipment are as follows:

Furniture and fixtures	7 years
Automobiles	7 years
Laboratory equipment	5 years
Computer equipment	3 years
Software	3 years
Leasehold improvements	Shorter of lease term or estimated useful life

## **Long-lived assets**

We review long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. An impairment loss is recognized when the total estimated future undiscounted cash flows expected to result from the use of the asset and its eventual disposition are less than its carrying amount. Impairment, if any, is assessed using discounted cash flows or other appropriate measures of fair value. There were no long-lived asset impairment losses recorded for any period presented.

## **Fair value of financial instruments**

Our financial instruments consist principally of cash and cash equivalents, marketable securities, accounts payable, accrued liabilities, finance leases, debt and convertible senior notes. The carrying amounts of certain of these financial instruments, including cash and cash equivalents, accounts receivable, accounts payable and accrued and other current liabilities approximate their current fair value due to the relatively short-term nature of these accounts. Based on borrowing rates available to us, the carrying value of finance leases approximate their fair values.

## **Revenue recognition**

We recognize revenue when control of the promised goods or services is transferred to the customer in an amount that reflects the consideration it expects to be entitled to in exchange for those goods or services. All revenues are generated from contracts with customers. We utilize the following practical expedients and exemptions:

- Certain information about remaining performance obligations is not disclosed because the underlying contracts have an original expected duration of one year or less,
- Costs to obtain or fulfill a contract are expensed when incurred because the amortization period would have been one year or less, and

- No adjustments to promised consideration were made for financing as we expect, at contract inception, that the period between the transfer of a promised good or service and when the customer pays for that good or service will be one year or less.

#### *Test revenue*

The majority of our revenue is generated from genetic testing services that provide analysis and associated interpretation of the sequencing of parts of the genome. Test orders are placed under signed requisitions, and we often enter into contracts with institutions (e.g., hospitals, clinics, partners) and insurance companies that include pricing provisions under which such tests are billed. Billing terms are generally net thirty to sixty days.

While the transaction price of diagnostic tests is originally established either via contract or pursuant to our standard list price, we often provide concessions for tests billed to insurance carriers, and therefore the transaction price for patient insurance-billed tests is considered to be variable and revenue is recognized based on an estimate of the consideration to which we will be entitled at an amount for which it is probable that a reversal of cumulative consideration will not occur. Making these estimates requires significant judgments based upon such factors as length of payer relationship, historical payment patterns, changes in contract provisions and insurance reimbursement policies. These judgments are reviewed quarterly and updated as necessary.

In connection with some diagnostic test orders, we offer limited re-requisition rights (“Re-Requisition Rights”) that are considered distinct at contract inception, and therefore certain diagnostic test orders contain two performance obligations, the performance of the original test and the Re-Requisition Rights. When Re-Requisition Rights are granted, we allocate the transaction price to each performance obligation based on the relative estimated standalone selling prices. In order to comply with loss contract rules, the allocations are adjusted, if necessary, to ensure the amount deferred for Re-Requisition Rights is no less than the estimated cost of fulfilling our related obligations.

We look to transfer of control in assessing timing of recognition of revenue in connection with each performance obligation. In general, revenue in connection with diagnostic tests is recognized upon delivery of the underlying clinical report or when the report is made available on our web portal. Outstanding performance obligations pertaining to orders received but for which the underlying report has not been issued are generally satisfied within a thirty-day period. Revenue in connection with Re-Requisition Rights is recognized as the rights are exercised or expire unexercised, which is generally within ninety days of initial deferral.

#### *Other revenue*

We also enter into collaboration and genome network contracts. Collaboration agreements provide customers with diagnostic testing and related data aggregation reporting services that are provided over the contract term. Collaboration revenue is recognized as the testing and reporting services are delivered to the customer. Genome network offerings consist of subscription services related to a proprietary software platform designed to connect patients, clinicians, advocacy organizations, researchers and therapeutic developers to accelerate the understanding, diagnosis and treatment of hereditary disease. Such services are recognized on a straight-line basis over the subscription periods.

Amounts due under collaboration and genome network agreements are typically billable on net thirty-day terms.

#### **Cost of revenue**

Cost of revenue reflects the aggregate costs incurred in delivering the genetic testing results to clinicians and patients and includes expenses for personnel-related costs including stock-based compensation, materials and supplies, equipment and infrastructure expenses associated with testing and allocated overhead including rent, equipment depreciation, amortization of acquired intangibles and utilities.

#### **Income taxes**

We use the asset and liability method of accounting for income taxes. Under this method, deferred tax assets and liabilities are determined based on the differences between the financial reporting and the tax bases of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. A valuation allowance is provided when it is more likely than not that some portion or all of a deferred tax asset will not be realized. Significant judgment is required in determining the net valuation allowance which includes our evaluation of all available evidence including past operating results, estimates on future taxable income and acquisition-related tax assets and liabilities. As of December 31, 2019, we recorded a full valuation allowance on our net deferred tax assets because we expect that it is more likely than not that our deferred tax assets will not be realized in the foreseeable future.

### **Stock-based compensation**

We measure stock-based payment awards made to employees and directors based on the estimated fair values of the awards and recognize the compensation expense over the requisite service period. We use the Black-Scholes option-pricing model to estimate the fair value of stock option awards and employee stock purchase plan ("ESPP") purchases. The fair value of restricted stock unit ("RSU") awards with time-based vesting terms is based on the grant date share price. We grant performance-based restricted stock unit ("PRSU") awards to certain employees which vest upon the achievement of certain performance conditions, subject to the employees' continued service relationship with us. The probability of vesting is assessed at each reporting period and compensation cost is adjusted based on this probability assessment. We recognize such compensation expense on an accelerated vesting method.

Stock-based compensation expense for awards without a performance condition is recognized using the straight-line method. Stock-based compensation expense is based on the value of the portion of stock-based payment awards that is ultimately expected to vest. As such, our stock-based compensation is reduced for estimated forfeitures at the date of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates.

We account for stock issued in connection with business combinations based on the fair value of our common stock on the date of issuance.

### **Advertising**

Advertising expenses are expensed as incurred. We incurred advertising expenses of \$9.9 million, \$0.6 million and \$0.6 million during the years ended December 31, 2019, 2018 and 2017, respectively.

### **Comprehensive loss**

Comprehensive loss is composed of two components: net loss and other comprehensive income (loss). Other comprehensive income (loss) refers to gains and losses that under U.S. GAAP are recorded as an element of stockholders' equity, but are excluded from net loss. Our other comprehensive income (loss) consists of unrealized gains or losses on investments in available-for-sale securities.

### **Net loss per share**

Basic net loss per share is calculated by dividing net loss by the weighted-average number of common shares outstanding during the period, without consideration of common stock equivalents. Diluted net loss per share is computed by dividing net loss by the weighted-average number of common share equivalents outstanding for the period determined using the treasury stock method. Potentially dilutive securities, consisting of preferred stock, options to purchase common stock, common stock warrants, shares of common stock pursuant to ESPP, common stock issuable in connection with our Convertible Senior Notes, RSUs and PRSUs, are considered to be common stock equivalents and were excluded from the calculation of diluted net loss per share because their effect would be antidilutive for all periods presented.

### **Prior period reclassifications**

We have reclassified certain amounts in prior periods to conform with current presentation.

### **Recent accounting pronouncements**

We evaluate all Accounting Standards Updates ("ASUs") issued by the FASB for consideration of their applicability. ASUs not included in the disclosures in this report were assessed and determined to be either not applicable or are not expected to have a material impact on our consolidated financial statements.

#### ***Recently issued accounting pronouncements not yet adopted***

In June 2016, FASB issued ASU 2016-13, *Financial Instruments-Credit Losses (Topic 326)*, which requires measurement and recognition of expected credit losses for financial assets. This guidance will become effective for us beginning in the first quarter of 2020 and must be adopted using a modified retrospective approach, with certain exceptions. We are currently evaluating the impact of the adoption of this standard on our consolidated financial statements.

### Recently adopted accounting pronouncements

In December 2019, the FASB issued ASU No. 2019-12, *Simplifying the Accounting for Income Taxes* (“ASU 2019-12”), which simplifies the accounting for income taxes, eliminates certain exceptions within ASC 740, Income Taxes, and clarifies certain aspects of the current guidance to promote consistency among reporting entities. ASU 2019-12 is effective for fiscal years beginning after December 15, 2020 with early adoption permitted. We have early adopted this ASU effective for the year ended December 31, 2019.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*, and in July 2018 issued ASU 2018-10, *Codification Improvements to Topic 842, Leases*, and ASU 2018-11, *Leases (Topic 842): Targeted Improvements* (the foregoing ASUs collectively referred to as “Topic 842”). Under this guidance, lessees are required to recognize a lease liability and a right-of-use asset for all leases at the commencement date and also make expanded disclosures about leasing arrangements.

On January 1, 2019, we adopted Topic 842 using the modified retrospective approach in accordance with Topic 842. Adoption of Topic 842 had a material impact on our consolidated balance sheets, but did not have an impact on our consolidated statements of operations. We elected the package of practical expedients permitted under the transition guidance which, among other things, allowed us to carry forward the historical classification of leases in place as of January 1, 2019.

The effect of the adoption of Topic 842 on our consolidated balance sheet as of January 1, 2019 was as follows (in thousands):

	December 31, 2018	Adjustments Due to the Adoption of Topic 842	January 1, 2019
Property and equipment, net	\$ 27,886	\$ (5,159)	\$ 22,727
Operating lease assets	\$ —	\$ 36,711	\$ 36,711
Other assets	\$ 3,064	\$ 5,159	\$ 8,223
Accrued liabilities	\$ 26,563	\$ (490)	\$ 26,073
Operating lease obligations	\$ —	\$ 4,697	\$ 4,697
Operating lease obligations, net of current portion	\$ —	\$ 41,279	\$ 41,279
Other long-term liabilities	\$ 8,956	\$ (8,775)	\$ 181

The adjustments due to the adoption of Topic 842 primarily relate to the recognition of operating and finance lease right-of-use assets and operating lease liabilities. Finance lease assets are recorded within other assets on our consolidated balance sheet and were \$5.2 million as of implementation of Topic 842 on January 1, 2019 and \$5.6 million as of December 31, 2019.

Under Topic 842, we determine if an arrangement is a lease at inception primarily based on the determination of the party responsible for directing the use of an underlying asset within a contract. Operating leases are included in operating lease assets and operating lease obligations in our consolidated balance sheets. Lease assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease right-of-use assets and liabilities are recognized at the lease commencement date based on the present value of lease payments over the lease term. In determining the present value of lease payments, we use our incremental borrowing rate based on the information available at the lease commencement date which includes significant assumptions made by us including our estimated credit rating. Operating lease right-of-use assets also include any lease payments made prior to the lease commencement date and exclude any lease incentives paid or payable at the lease commencement date. Lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise any such options. Lease expense is recognized on a straight-line basis over the expected lease term, or in some cases, the useful life of the underlying asset.

As allowed under Topic 842, we elected to not apply the recognition requirements of Topic 842 to short-term leases, that is, leases with terms of 12 months or less which do not include an option to purchase the underlying asset that we are reasonably certain to exercise. For short-term leases, we recognize lease payments as operating expenses on a straight-line basis over the lease term.

As a result of our election of the package of practical expedients permitted under the Topic 842 transition guidance, for assets related to facilities leases we elected to account for lease and non-lease components, such as common area maintenance charges, as a single lease component.

We did not identify any material embedded leases with the adoption of Topic 842 and therefore the implementation of Topic 842 primarily focused on the treatment of our previously identified leases.



Prior period amounts were not adjusted and continue to be reported in accordance with our historic accounting under previous lease guidance, ASC 840: *Leases*. Under ASC 840, we rented facilities under operating lease agreements and recognized related rent expense on a straight-line basis over the term of the applicable lease agreement. Some of the lease agreements contained rent holidays, scheduled rent increases, lease incentives, and renewal options. Rent holidays and scheduled rent increases were included in the determination of rent expense recorded over the lease term. Lease incentives were recognized as a reduction of rent expense on a straight-line basis over the term of the lease. Renewals were not assumed in the determination of the lease term unless they were deemed to be reasonably assured at the inception of the lease. We recognized rent expense beginning on the date we obtained the legal right to use and control the leased space.

On January 1, 2018, we adopted the provisions of ASC Topic 606 using the modified retrospective method. From adoption to date, we have recognized all our revenue from contracts with customers within the scope of Topic 606. In connection with the adoption, we recognized the cumulative effect of initially applying this standard as an adjustment to retained earnings on the date of adoption. Comparative information prior to the date of adoption has not been restated and continues to be reported under the accounting standards in effect for those periods.

Under ASC 605, test revenue was recognized when persuasive evidence of an arrangement existed; delivery had occurred or services had been rendered; the fee was fixed or determinable; and collectability was reasonably assured. The criterion for whether the fee was fixed or determinable and whether collectability was reasonably assured were based on management's judgments. When evaluating collectability, in situations where contracted reimbursement coverage did not exist, we considered whether we had sufficient history to reliably estimate a payer's individual payment patterns. For most customers, we had not been able to demonstrate a predictable pattern of collectability, and therefore recognized revenue when payment was received. For customers who had demonstrated a consistent pattern of payment of tests billed at appropriate amounts, we recognized revenue at estimated realizable amounts upon delivery of test results.

### 3. Revenue, accounts receivable and deferred revenue

Test revenue is generated from sales of diagnostic tests to three groups of customers: institutions, such as hospitals, clinics and partners; patients who pay directly; and patients' insurance carriers. Amounts billed and collected, and the timing of collections, vary based on whether the payer is an institution, a patient or an insurance carrier. Other revenue consists principally of revenue recognized under collaboration and genome network agreements.

The following table includes our revenue as disaggregated by payer category (in thousands):

	Year Ended December 31,		
	2019	2018	2017 <sup>(1)</sup>
Test revenue:			
Institutions	\$ 41,049	\$ 34,618	\$ 17,238
Patient - direct	17,597	13,589	5,638
Patient - insurance	153,827	96,353	42,293
Total test revenue	212,473	144,560	65,169
Other revenue	4,351	3,139	3,052
Total revenue	\$ 216,824	\$ 147,699	\$ 68,221

<sup>(1)</sup> 2017 amounts are presented as originally reported based upon the accounting standards in effect for that period.

We recognize revenue related to billings based on estimates of the amount that will ultimately be realized. Cash collections for certain tests delivered may differ from rates originally estimated. As a result of new information, we updated our estimate of the amounts to be recognized for previously delivered tests which resulted in the following increases to revenue and decreases to our loss from operations and basic and diluted net loss per share (in millions, except per share amounts):

	Year Ended December 31,	
	2019	2018
Revenue	\$ 4.1	\$ 4.5
Loss from operations	\$ (4.1)	\$ (4.5)
Net loss per share, basic and diluted	\$ (0.05)	\$ (0.07)

### Accounts receivable

The majority of our accounts receivable represents amounts billed to institutions (e.g., hospitals, clinics, partners) and estimated amounts to be collected from third-party insurance payers for diagnostic test revenue recognized. Also included are amounts due under the terms of collaboration and genome network agreements for diagnostic testing and data aggregation reporting services provided and proprietary platform access rights transferred.

### Deferred revenue

We record deferred revenue when cash payments are received or due in advance of our performance related to one or more performance obligations. The amounts deferred to date primarily consist of prepayments related to our consumer direct channel as well as consideration received pertaining to the estimated exercise of certain re-requisition rights. In order to comply with loss contract rules, our re-requisition rights revenue deferral is no less than the estimated cost of fulfilling related obligations. We recognize revenue related to re-requisition rights as the rights are exercised or expire unexercised, which is generally within 90 days of initial deferral.

## 4. Business combinations

### Singular Bio

In June 2019, we acquired 100% of the fully diluted equity of Singular Bio, a privately held company developing single molecule detection technology, for approximately \$57.3 million, comprised of \$53.9 million in the form of 2.5 million shares of our common stock and the remainder in cash.

Prior to the acquisition, we entered into a co-development agreement with Singular Bio whereby we paid Singular Bio \$3.0 million for a 12-month right of first refusal and an opportunity to conduct due diligence on its business. As of January 2019, we made all required payments under the terms of this agreement.

In connection with the acquisition, all of Singular Bio's equity awards that were outstanding and unvested prior to the acquisition became fully vested per the terms of the merger agreement. The acceleration of vesting required us to allocate the fair value of the equity attributable to pre-combination service to the purchase price and the remainder was considered our post-combination expense. We recognized post-combination expense related to the acceleration of unvested equity of \$3.2 million and we also incurred transaction costs of \$1.5 million related to the acquisition of Singular Bio; both of these charges were recorded as general and administrative expense during the year ended December 31, 2019. We included the financial results of Singular Bio in our consolidated financial statements from the acquisition date, which were not material for the year ended December 31, 2019.

Assets acquired and liabilities assumed are recorded based on valuations derived from estimated fair value assessments and assumptions used by us. While we believe that our estimates and assumptions underlying the valuations are reasonable, different estimates and assumptions could result in different valuations assigned to the individual assets acquired and liabilities assumed, and the resulting amount of goodwill. The following table summarizes the fair values of assets acquired and liabilities assumed at the date of acquisition (in thousands):

Cash	\$	4,988
Property and equipment		303
In-process research and development		29,988
Total identifiable assets acquired		35,279
Current liabilities assumed		(479)
Deferred tax liability		(3,950)
Net identifiable assets acquired		30,850
Goodwill		26,461
Total purchase price	\$	57,311

Based on the guidance provided in ASC 805, we accounted for the acquisition of Singular Bio as a business combination in which we determined that 1) Singular Bio was a business which combines inputs and processes to create outputs, and 2) substantially all of the fair value of gross assets acquired was not concentrated in a single identifiable asset or group of similar identifiable assets.

Our purchase price allocation for the acquisition is preliminary and subject to revision as additional information about fair value of assets and liabilities becomes available, primarily related to our deferred tax liability assumed in connection with the acquisition as the short period tax return has not yet been filed. Additional information that existed

as of the acquisition date but at the time was unknown to us may become known to us during the remainder of the measurement period, a period not to exceed 12 months from the acquisition date.

Goodwill represents the excess of the purchase price over the fair value of the net tangible and intangible assets acquired. The acquisition of Singular Bio resulted in the recognition of \$26.5 million of goodwill which we believe consists primarily of technological expertise and capabilities within nucleic acid analysis and the ability to utilize the technology outside NIPS. Goodwill created as a result of the acquisition of Singular Bio is not deductible for tax purposes.

We recorded an income tax benefit of \$4.0 million in June 2019 due to net deferred tax liabilities assumed in connection with our acquisition of Singular Bio which provided a future source of income to support the realization of our deferred tax assets and resulted in a partial release of our valuation allowance.

We granted approximately \$90.0 million of RSUs under our 2015 Stock Incentive Plan as inducement awards to new employees who joined Invitae in connection with our acquisition of Singular Bio. \$45.0 million of the RSUs are time-based and vest in three equal installments in December 2019, June 2020, and December 2020, subject to the employee's continued service with us ("Time-based RSUs") and \$45.0 million of the RSUs are PRSUs that vest upon the achievement of certain performance conditions over a period of approximately 12 months from the date of acquisition, subject to the employee's continued service with us. Since the number of awards granted is based on a 30-day volume weighted-average share price with a fixed dollar value, these Time-based RSUs and PRSUs are liability-classified and the fair value will be estimated at each reporting period based on the number of shares that are expected to be issued at each reporting date and our closing stock price, which combined are categorized as Level 3 inputs. Therefore, fair value of the RSUs and PRSUs and the number of shares to be issued will not be fixed until the awards vest.

During the year ended December 31, 2019, we recorded research and development stock-based compensation expense of \$14.7 million related to the Time-based RSUs and \$24.4 million related to the PRSUs based on our evaluation of the probability of achieving performance conditions. As of December 31, 2019, the Time-based RSUs and PRSUs had a total fair value of \$41.9 million and \$42.6 million, respectively, based on a total estimated issuance of 5.2 million shares and expectation of the achievement of the performance conditions. As of December 31, 2019, 0.8 million of the Time-based RSUs had vested and none of these PRSUs had vested.

### ***Jungla***

In July 2019, we acquired 100% of the equity interest of Jungla, a privately held company developing a platform for molecular evidence testing in genes, for approximately \$59.0 million, comprised of \$44.9 million in the form of shares of our common stock and the remainder in cash. We agreed to pay a portion of the cash and issue approximately 0.2 million shares of our common stock after a 12-month period, subject to a hold back to satisfy indemnification obligations that may arise. We incurred \$0.8 million of transaction costs related to the acquisition of Jungla which were recorded as general and administrative expense during the year ended December 31, 2019.

We may be required to pay contingent consideration based on achievement of post-closing development milestones. As of the acquisition date, the fair value of this contingent consideration was \$10.7 million, \$9.6 million of which would be in the form of shares of our common stock, priced at the time of milestone achievement, and the remainder in cash. The milestones are expected to be completed within two years from the date of the acquisition. The material factors that may impact the fair value of the contingent consideration, and therefore, this liability, are the probabilities and timing of achieving the related milestones and the discount rate we used to estimate the fair value. Significant changes in any of the probabilities of success would result in a significant change in the fair value, which is estimated at each reporting date with changes reflected as a general and administrative expense. As of December 31, 2019, the fair value of the contingent consideration was \$11.3 million.

In connection with the acquisition, a portion of Jungla's equity awards that were outstanding and unvested prior to the acquisition became fully vested per the terms of the merger agreement. The acceleration of vesting required us to allocate the fair value of the equity attributable to pre-combination service to the purchase price and the remaining amount was considered our post-combination expense. In July 2019, we recognized post-combination expense related to the acceleration of unvested equity of \$2.9 million, which was recorded as general and administrative expense. We included the financial results of Jungla in our consolidated financial statements from the acquisition date, which were not material for the year ended December 31, 2019.

The following table summarizes the purchase price and post-combination expense recorded as a part of the acquisition of Jungla in July 2019 (in thousands):

	Purchase Price	Post-combination Expense
Cash transferred	\$ 13,261	\$ 2,151
Hold-back consideration - cash	270	253
Hold-back consideration - common stock	4,574	—
Contingent consideration	10,158	542
Common stock transferred	30,753	—
Total	<u>\$ 59,016</u>	<u>\$ 2,946</u>

Assets acquired and liabilities assumed are recorded based on valuations derived from estimated fair value assessments and assumptions used by us. While we believe that our estimates and assumptions underlying the valuations are reasonable, different estimates and assumptions could result in different valuations assigned to the individual assets acquired and liabilities assumed, and the resulting amount of goodwill. The following table summarizes the fair values of assets acquired and liabilities assumed at the date of acquisition (in thousands):

Cash	\$ 289
Developed technology	44,140
Total identifiable assets acquired	44,429
Accounts payable	(8)
Deferred tax liability	(8,700)
Net identifiable assets acquired	35,721
Goodwill	23,295
Total purchase price	<u>\$ 59,016</u>

Based on the guidance provided in ASC 805, we accounted for the acquisition of Jungla as a business combination in which we determined that 1) Jungla was a business which combines inputs and processes to create outputs, and 2) substantially all of the fair value of gross assets acquired was not concentrated in a single identifiable asset or group of similar identifiable assets.

Our purchase price allocation for the acquisition is preliminary and subject to revision as additional information about fair value of assets and liabilities becomes available, primarily related to our deferred tax liability assumed in connection with the acquisition as the short period tax return has not yet been filed. Additional information that existed as of the acquisition date but at the time was unknown to us may become known to us during the remainder of the measurement period, a period not to exceed 12 months from the acquisition date.

We measured the identifiable assets and liabilities assumed at their acquisition date fair values separately from goodwill. The intangible asset acquired is developed technology related to Jungla's functional molecular platform. The fair value of the developed technology was estimated using an income approach with an estimated useful life of ten years.

Goodwill represents the excess of the purchase price over the fair value of the net tangible and intangible assets acquired. The acquisition of Jungla resulted in the recognition of \$23.3 million of goodwill which we believe consists primarily of technological expertise related to large-scale molecular and genomic technologies and the ability to expand the use of these into other areas of our business. Goodwill created as a result of the acquisition of Jungla is not deductible for tax purposes.

We recorded an income tax benefit of \$8.7 million in July 2019 due to net deferred tax liabilities assumed in connection with our acquisition of Jungla which provided a future source of income to support the realization of our deferred tax assets and resulted in a partial release of our valuation allowance.

**Pro forma financial information (unaudited)**

The unaudited pro forma financial information in the table below summarizes the combined results of operations for Invitae, Singular Bio and Jungla as though the companies had been combined as of January 1, 2018. The pro forma amounts have been adjusted for:

- transaction expenses incurred by Singular Bio, Jungla and us,
- the impacts of the co-development agreement between Singular Bio and us,
- the historical interest expense incurred by Singular Bio on its debt and debt-like items,
- compensation expense recognized in relation to the equity awards granted in connection with the acquisition of Singular Bio,
- amortization expense resulting from the developed technology acquired through the acquisition of Jungla,
- post-combination expense,
- income tax benefits resulting from the deferred tax liabilities acquired, and
- the 2.5 million and 1.4 million shares of our common stock issued upon the closing of the Singular Bio and Jungla transactions, respectively.

The following unaudited pro forma financial information is for informational purposes only and is not necessarily indicative of the results of operations that would have been achieved as if the acquisitions had taken place as of January 1, 2018 (in thousands, except per share data):

	Year Ended December 31,							
	2019				2018			
	Invitae	Singular Bio	Jungla	Total	Invitae	Singular Bio	Jungla	Total
Revenue	\$ 216,824	\$ —	\$ —	\$ 216,824	\$ (147,699)	\$ —	\$ —	\$ (147,699)
Net loss	\$ (241,965)	\$ 39,752	\$ (8,571)	\$ (210,784)	\$ (129,355)	\$ (2,003)	\$ (5,016)	\$ (136,374)
Shares	90,859	1,160	735	92,754	66,747	2,499	1,366	70,612
Basic and diluted net loss per share	\$ (2.66)			\$ (2.27)	\$ (1.94)			\$ (1.93)

**Clear Genetics**

In November 2019, we acquired 100% of the equity interest of Clear Genetics, a developer of software for providing genetic services at scale, for approximately \$50.1 million. Of the cash and stock purchase price consideration issued, \$0.2 million of cash and approximately 0.4 million shares of our common stock are subject to a 12-month hold back to satisfy indemnification obligations that may arise.

In connection with the acquisition, a portion of Clear Genetics' equity awards that were outstanding and unvested prior to the acquisition became fully vested per the terms of the merger agreement. The acceleration of vesting required us to allocate the fair value of the equity attributable to pre-combination service to the purchase price and the remaining amount was considered our post-combination expense. In November 2019, we recognized post-combination expense related to the acceleration of unvested equity of \$0.6 million, which was recorded as general and administrative expense. We included the financial results of Clear Genetics in our consolidated financial statements from the acquisition date, which were not material for the year ended December 31, 2019. We incurred \$0.4 million of transaction costs related to the acquisition of Clear Genetics which were recorded as general and administrative expense during the year ended December 31, 2019.

The following table summarizes the purchase price and post-combination expense recorded as a part of the acquisition of Clear Genetics in November 2019 (in thousands):

	Purchase Price	Post-combination Expense
Cash transferred	\$ 24,645	\$ 542
Hold-back consideration - cash	196	98
Hold-back consideration - common stock	7,294	—
Common stock transferred	17,927	—
<b>Total</b>	<b>\$ 50,062</b>	<b>\$ 640</b>

Assets acquired and liabilities assumed are recorded based on valuations derived from estimated fair value assessments and assumptions used by us. While we believe that our estimates and assumptions underlying the valuations are reasonable, different estimates and assumptions could result in different valuations assigned to the individual assets acquired and liabilities assumed, and the resulting amount of goodwill. The following table summarizes the fair values of assets acquired and liabilities assumed through our acquisition of Clear Genetics at the date of acquisition (in thousands):

Cash	\$ 599
Accounts receivable	114
Developed technology	28,293
<b>Total identifiable assets acquired</b>	<b>29,006</b>
Other current liabilities	(70)
Deferred tax liability	(5,800)
<b>Net identifiable assets acquired</b>	<b>23,136</b>
Goodwill	26,926
<b>Total purchase price</b>	<b>\$ 50,062</b>

Based on the guidance provided in ASC 805, we accounted for the acquisition of Clear Genetics as a business combination in which we determined that 1) Clear Genetics was a business which combines inputs and processes to create outputs, and 2) substantially all of the fair value of gross assets acquired was not concentrated in a single identifiable asset or group of similar identifiable assets.

Our purchase price allocation for the acquisition is preliminary and subject to revision as additional information about fair value of assets and liabilities becomes available, primarily related to our deferred tax liability assumed in connection with the acquisition as the short period tax return has not yet been filed. Additional information that existed as of the acquisition date but at the time was unknown to us may become known to us during the remainder of the measurement period, a period not to exceed 12 months from the acquisition date.

We measured the identifiable assets and liabilities assumed at their acquisition date fair values separately from goodwill. The intangible asset acquired is developed technology related to Clear Genetics' patient support technology platform. The fair value of the developed technology was estimated using an income approach with an estimated useful life of eight years.

Goodwill represents the excess of the purchase price over the fair value of the net tangible and intangible assets acquired. The acquisition of Clear Genetics resulted in the recognition of \$26.9 million of goodwill which we believe relates primarily to expansion of the acquired technology into all realms of genetic testing. Goodwill created as a result of the acquisition of Clear Genetics is not deductible for tax purposes.

We recorded an income tax benefit of \$5.8 million in November 2019 due to net deferred tax liabilities assumed in connection with our acquisition of Clear Genetics which provided a future source of income to support the realization of our deferred tax assets and resulted in a partial release of our valuation allowance.

## 5. Goodwill and intangible assets

### Goodwill

The changes in the carrying amounts of goodwill were as follows (in thousands):

Balance as of December 31, 2018	\$ 50,095
Goodwill acquired - Singular Bio	26,461
Goodwill acquired - Jungla	23,295
Goodwill acquired - Clear Genetics	26,926
Balance as of December 31, 2019	<u>\$ 126,777</u>

### Intangible assets

The following table presents details of our acquired intangible assets as of December 31, 2019 (in thousands):

	Cost	Accumulated Amortization	Net	Weighted-Average Useful Life (in Years)	Weighted- Average Estimated Remaining Useful Life (in Years)
Customer relationships	\$ 23,763	\$ (5,141)	\$ 18,622	10.0	7.6
Developed technology	84,396	(8,476)	75,920	8.6	8.0
Non-compete agreement	286	(172)	114	5.0	2.0
Trade name	576	(480)	96	2.7	0.5
Patent licensing agreement	496	(70)	426	15.0	12.9
Favorable leases	247	(238)	9	2.2	0.1
In-process research and development	29,988	—	29,988	n/a	n/a
	<u>\$ 139,752</u>	<u>\$ (14,577)</u>	<u>\$ 125,175</u>	8.9	7.9

Acquisition-related intangibles included in the above table are finite-lived, other than in-process research and development which has an indefinite life, and are carried at cost less accumulated amortization. Customer relationships are being amortized on an accelerated basis, in proportion to estimated cash flows. All other finite-lived acquisition-related intangibles are being amortized on a straight-line basis over their estimated lives, which approximates the pattern in which the economic benefits of the intangible assets are realized. Amortization expense was \$7.7 million, \$5.0 million, and \$1.8 million for the years ended December 31, 2019, 2018 and 2017, respectively. Intangible assets are carried at cost less accumulated amortization. Amortization expense is recorded to cost of revenue, research and development, sales and marketing and general and administrative expense.

The following table summarizes our estimated future amortization expense of intangible assets with finite lives as of December 31, 2019 (in thousands):

	Amount
2020	\$ 13,479
2021	13,783
2022	12,078
2023	11,065
2024	10,787
Thereafter	33,995
Total estimated future amortization expense	<u>\$ 95,187</u>

## 6. Balance sheet components

### *Property and equipment, net*

Property and equipment consisted of the following (in thousands):

	December 31,	
	2019	2018
Leasehold improvements	\$ 18,352	\$ 13,034
Laboratory equipment	24,873	22,149
Equipment under capital lease	—	7,129
Computer equipment	5,995	4,723
Software	2,611	2,594
Furniture and fixtures	1,198	784
Automobiles	58	20
Construction-in-progress	10,795	1,962
Total property and equipment, gross	63,882	52,395
Accumulated depreciation and amortization	(26,135)	(24,509)
Total property and equipment, net	\$ 37,747	\$ 27,886

Depreciation expense was \$7.1 million, \$8.5 million and \$7.2 million for the years ended December 31, 2019, 2018 and 2017, respectively.

### *Accrued liabilities*

Accrued liabilities consisted of the following (in thousands):

	December 31,	
	2019	2018
Accrued compensation and related expenses	\$ 16,440	\$ 7,917
Deferred revenue	1,429	761
Compensation and other liabilities associated with business combinations	30,560	6,460
Liability associated with co-development agreement	—	2,000
Other	16,385	9,425
Total accrued liabilities	\$ 64,814	\$ 26,563

### *Other long-term liabilities*

Other long-term liabilities consisted of the following (in thousands):

	December 31,	
	2019	2018
Lease incentive obligation, non-current	\$ —	\$ 3,280
Deferred rent, non-current	—	5,495
Liabilities associated with business combinations, non-current	8,000	—
Other non-current liabilities	—	181
Total other long-term liabilities	\$ 8,000	\$ 8,956

## 7. Fair value measurements

Financial assets and liabilities are recorded at fair value. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability (an exit price) in an orderly transaction between market participants at the reporting date. The authoritative guidance establishes a three-level valuation hierarchy that prioritizes the inputs to valuation techniques used to measure fair value based upon whether such inputs are observable or unobservable. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect market assumptions made by the reporting entity.



The three-level hierarchy for the inputs to valuation techniques is summarized as follows:

Level 1—Observable inputs such as quoted prices (unadjusted) for identical instruments in active markets.

Level 2—Observable inputs such as quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, or model-derived valuations whose significant inputs are observable.

Level 3—Unobservable inputs that reflect the reporting entity's own assumptions.

The following tables set forth the fair value of our consolidated financial instruments that were measured at fair value on a recurring basis (in thousands):

	December 31, 2019						
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value	Level 1	Level 2	Level 3
<b>Financial assets:</b>							
Money market funds	\$ 39,396	\$ —	\$ —	\$ 39,396	\$ 39,396	\$ —	\$ —
Certificates of deposit	300	—	—	300	—	300	—
U.S. treasury notes	150,627	—	(15)	150,612	150,612	—	—
U.S. government agency securities	193,302	6	—	193,308	—	193,308	—
Total financial assets	<u>\$ 383,625</u>	<u>\$ 6</u>	<u>\$ (15)</u>	<u>\$ 383,616</u>	<u>\$ 190,008</u>	<u>\$ 193,608</u>	<u>\$ —</u>
<b>Financial liabilities:</b>							
Contingent consideration				\$ 11,300	\$ —	\$ —	\$ 11,300
Total financial liabilities				<u>\$ 11,300</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 11,300</u>
					<b>December 31, 2019</b>		
<b>Reported as:</b>							
Cash equivalents						\$	136,997
Restricted cash							6,183
Marketable securities							240,436
Total cash equivalents, restricted cash, and marketable securities						<u>\$</u>	<u>383,616</u>
Accrued liabilities						<u>\$</u>	<u>3,300</u>
Other long-term liabilities						<u>\$</u>	<u>8,000</u>

	December 31, 2018						
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value	Level 1	Level 2	Level 3
<b>Financial assets:</b>							
Money market funds	\$ 93,934	\$ —	\$ —	\$ 93,934	\$ 93,934	\$ —	\$ —
Certificates of deposit	300	—	—	300	—	300	—
Commercial paper	10,908	—	(1)	10,907	—	10,907	—
U.S. treasury notes	9,990	—	—	9,990	9,990	—	—
U.S. government agency securities	6,001	—	(4)	5,997	—	5,997	—
<b>Total financial assets</b>	<b>\$ 121,133</b>	<b>\$ —</b>	<b>\$ (5)</b>	<b>\$ 121,128</b>	<b>\$ 103,924</b>	<b>\$ 17,204</b>	<b>\$ —</b>
<b>Financial liabilities:</b>							
Contingent consideration				\$ 4,998	\$ —	\$ —	\$ 4,998
<b>Total financial liabilities</b>				<b>\$ 4,998</b>	<b>\$ —</b>	<b>\$ —</b>	<b>\$ 4,998</b>

	December 31, 2018
Reported as:	
Cash equivalents	\$ 101,395
Restricted cash	6,006
Marketable securities	13,727
<b>Total cash equivalents, restricted cash, and marketable securities</b>	<b>\$ 121,128</b>
Accrued liabilities	\$ 4,998

There were no transfers between Level 1, Level 2 and Level 3 during the periods presented. The total fair value of investments with unrealized losses at December 31, 2019 was \$150.6 million. None of the available-for-sale securities held as of December 31, 2019 has been in a material continuous unrealized loss position for more than one year. At December 31, 2019, unrealized losses on available-for-sale investments are not attributed to credit risk and are considered to be temporary. We believe it is more likely than not that investments in an unrealized loss position will be held until maturity or the recovery of the cost basis of the investment. To date, we have not identified any other-than-temporary declines in market value and thus has not recorded any impairment charges on our financial assets other than on an investment in a private company during 2018 of \$2.9 million. Interest income generated from our investments was \$5.2 million and \$1.5 million during the years ended December 31, 2019 and 2018, respectively.

At December 31, 2019, the remaining contractual maturities of available-for-sale securities ranged from three to 12 months.

Our certificates of deposit, commercial paper and debt securities of U.S. government agency entities are classified as Level 2 as they are valued based upon quoted market prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active and model-based valuation techniques for which all significant inputs are observable in the market or can be corroborated by observable market data for substantially the full term of the assets. Where applicable, these models project future cash flows and discount the future amounts to a present value using market-based observable inputs obtained from various third-party data providers, including but not limited to benchmark yields, interest rate curves, reported trades, broker/dealer quotes and reference data.

As of December 31, 2019, we had contingent obligations of \$11.3 million of our common stock to the former owners of Jungla in conjunction with our acquisition of Jungla in July 2019. The amount of the contingent obligation is dependent upon achievement of certain post-close development milestones. We estimated the fair value of the contingent consideration as \$10.7 million at the acquisition date in July 2019 using a discounted cash flow technique based on estimated achievement of the post-close milestones and discount rates which were Level 3 inputs not supported by market activity. These inputs can significantly affect the estimated fair value of the contingent consideration. The value of the liability is subsequently remeasured to fair value at each reporting date with changes recorded as general and administrative expense.

As of December 31, 2018, we had a contingent obligation of \$5.0 million of our common stock calculated using a 30-day trailing average share price to the former owners of AltaVoice in conjunction with our acquisition of AltaVoice in January 2017. The amount of the contingent obligation was dependent upon 2017 and 2018 revenue attributable to AltaVoice. Since revenue attributable to AltaVoice for the combined period of 2017 and 2018 was greater than the \$10.0 million contingent milestone, in April 2019 we issued 0.2 million shares of our common stock to the former owners of AltaVoice which had a fair value on the date of issuance of \$5.2 million to settle this contingent obligation.

## 8. Commitments and contingencies

### Leases

#### Operating leases

In 2015, we entered into a lease agreement for our headquarters and main production facility in San Francisco, California which commenced in 2016. This lease expires in 2026 and we may renew the lease for an additional ten years. This optional period was not considered reasonably certain to be exercised and therefore we determined the lease term to be a ten-year period expiring in 2026. In connection with the execution of the lease, we provided a security deposit of approximately \$4.6 million which is included in restricted cash in our consolidated balance sheets. We also have other operating leases in for office and laboratory space in California and Massachusetts. We expect to enter into new leases and modifying existing leases as we support continued growth of our operations.

As of December 31, 2019, the weighted-average remaining lease term for our operating leases was 6.5 years and the weighted-average discount rate used to determine our operating lease liability was 11.8%. Cash payments included in the measurement of our operating lease liabilities were \$10.2 million for the year ended December 31, 2019.

The components of lease costs, which were included in cost of revenue, research and development, selling and marketing and general and administrative expenses on our consolidated statements of operations, were as follows (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Operating lease costs	\$ 10,329	\$ 9,648	\$ 8,709
Sublease income	(173)	(156)	(157)
Total operating lease costs	10,156	9,492	8,552
Finance lease costs	1,546	1,820	1,590
Total lease costs	\$ 11,702	\$ 11,312	\$ 10,142

Future minimum payments under non-cancelable operating leases as of December 31, 2019 are as follows (in thousands):

2020	\$ 10,156
2021	10,183
2022	10,131
2023	9,912
2024	10,035
Thereafter	18,238
Future non-cancelable minimum operating lease payments	68,655
Less: imputed interest	(21,594)
Total operating lease liabilities	47,061
Less: current portion	(4,870)
Operating lease obligations, net of current portion	\$ 42,191

### Finance leases

We have entered into various finance lease agreements to obtain laboratory equipment. The terms of our finance leases are generally three years with a weighted-average remaining lease term of 2.0 years as of December 31, 2019 and are typically secured by the underlying equipment. The weighted-average discount rate used to determine our finance lease liability was 5.5%. The portion of the future payments designated as principal repayment was classified as a finance lease obligation on our consolidated balance sheets. Cash payments included in the measurement of our finance lease liabilities were \$2.1 million for the year ended December 31, 2019.

Future payments under finance leases at December 31, 2019 are as follows (in thousands):

2020	\$	1,963
2021		608
2022		609
Total finance lease obligations		<u>3,180</u>
Less: interest		<u>(170)</u>
Present value of net minimum finance lease payments		3,010
Less: current portion		<u>(1,855)</u>
Finance lease obligations, net of current portion	\$	<u>1,155</u>

### Debt financing

In November 2018, we entered into a Note Purchase Agreement (the "2018 Note Purchase Agreement") pursuant to which we were eligible to borrow an aggregate principal amount up to \$200.0 million over a seven year maturity term which included an initial borrowing of \$75.0 million in November 2018. We received net proceeds of \$10.3 million after terminating and repaying the balance of our obligations of approximately \$64.7 million with our previous lender.

In September 2019, we settled our obligations under the 2018 Note Purchase Agreement in full for \$85.7 million, which included repayment of principal of \$75.0 million, accrued interest of \$2.4 million, and prepayment fees of \$8.9 million which were recorded as debt extinguishment costs in other expense, net in our statement of operations during the year ended December 31, 2019.

Interest expense related to our debt financings, excluding the impact of our Convertible Senior Notes, was \$5.7 million, \$6.7 million and \$3.5 million for the years ended December 31, 2019, 2018 and 2017, respectively.

### Convertible Senior Notes

In September 2019, we issued, at par value, \$350.0 million aggregate principal amount of 2.00% Convertible Senior Notes due 2024 in a private offering. The Convertible Senior Notes are our senior unsecured obligations and will mature on September 1, 2024, unless earlier converted, redeemed or repurchased. The Convertible Senior Notes bear cash interest at a rate of 2.0% per year, payable semi-annually in arrears on March 1 and September 1 of each year, beginning on March 1, 2020.

In accounting for the issuance of the Convertible Senior Notes, we separated the notes into liability and equity components. The carrying amount of the liability component was calculated by measuring the fair value of a similar liability that does not have an associated convertible feature using the effective interest method. The excess of the principal amount of the liability component over its carrying amount, referred to as the debt discount, is amortized to interest expense over the five-year term of the Convertible Senior Notes. The equity component of \$75.5 million, net of issuance costs, was recorded in additional paid-in capital on our consolidated balance sheet and will not be re-measured as long as it continues to meet the conditions for equity classification.

We received net proceeds of \$339.9 million from the sale of the Convertible Senior Notes after deducting commissions and offering expenses. These transaction costs were allocated to the liability and equity components based on their relative fair values. The transaction costs attributable to the liability component are amortized to interest expense over the term of the Convertible Senior Notes under the effective interest method, and the transaction costs attributable to the equity component were netted with the equity component in stockholder's equity.

Upon conversion, the Convertible Senior Notes will be convertible into cash, shares of our common stock or a combination of cash and shares of our common stock, at our election. Our current intent is to settle the principal amount of the Convertible Senior Notes in cash upon conversion, with any remaining conversion value being delivered in shares of our common stock.

The initial conversion rate for the Convertible Senior Notes is 33.6293 shares of our common stock per \$1,000 principal amount of the Convertible Senior Notes (equivalent to an initial conversion price of approximately \$29.74 per share of common stock). The conversion rate is subject to adjustment upon the occurrence of certain specified events but will not be adjusted for any accrued and unpaid interest. In addition, upon the occurrence of certain corporate events that occur prior to the maturity date or if we deliver a notice of redemption, we will, in certain circumstances, increase the conversion rate for a holder that elects to convert its Convertible Senior Notes in connection with such a corporate event or notice of redemption.

If we undergo a fundamental change (as defined in the indenture governing the Convertible Senior Notes), the holders of the Convertible Senior Notes may require us to repurchase all or any portion of their Convertible Senior Notes for cash at a repurchase price equal to 100% of the principal amount of the Convertible Senior Notes to be repurchased plus accrued and unpaid interest to, but excluding, the redemption date.

The Convertible Senior Notes will be convertible at the option of the holders at any time prior to the close of business on the business day immediately preceding March 1, 2024, only under the following circumstances: (1) during any calendar quarter commencing after the calendar quarter ending on December 31, 2019 (and only during such calendar quarter), if the last reported sale price of our common stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on, and including, the last trading day of the immediately preceding calendar quarter is greater than or equal to 130% of the conversion price for the Convertible Senior Notes on each applicable trading day; (2) during the five business day period after any five consecutive trading day period (the "measurement period") in which the trading price per \$1,000 principal amount of Convertible Senior Notes for each trading day of the measurement period was less than 98% of the product of the last reported sale price of our common stock and the conversion rate on each such trading day; (3) if we call any or all of the Convertible Senior Notes for redemption, at any time prior to the close of business on the scheduled trading day immediately preceding the redemption date; or (4) upon the occurrence of specified corporate events. On or after March 1, 2024 until the close of business on the business day immediately preceding the maturity date, holders may convert their Convertible Senior Notes at any time, regardless of the foregoing circumstances. As of December 31, 2019, none of the above circumstances had occurred and therefore the Convertible Senior Notes could not have been converted.

We may not redeem the Convertible Senior Notes prior to September 6, 2022. We may redeem for cash all or any portion of the Convertible Senior Notes, at our option, on or after September 6, 2022 and on or before the 30th scheduled trading day immediately before the maturity date if the last reported sale price of the Common Stock has been at least 130% of the conversion price then in effect for at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period (including the last trading day of such period) ending on, and including, the trading day immediately preceding the date on which we provide notice of redemption at a redemption price equal to 100% of the principal amount of the notes to be redeemed, plus accrued and unpaid interest to, but excluding, the redemption date.

The Convertible Senior Notes as of December 31, 2019 consisted of the following (in thousands):

Outstanding principal	\$	350,000
Unamortized debt discount and issuance costs		(81,245)
Net carrying amount, liability component	\$	<u>268,755</u>

As of December 31, 2019, the fair value of the Convertible Senior Notes was \$319.0 million. The estimated fair value of the Convertible Senior Notes, which are classified as Level 2 financial instruments, was determined based on the estimated or actual bid prices of the Convertible Senior Notes in an over-the-counter market. We recorded \$6.5 million of interest expense related to the Convertible Senior Notes during the year ended December 31, 2019.

#### **Guarantees and indemnifications**

As permitted under Delaware law and in accordance with our bylaws, we indemnify our directors and officers for certain events or occurrences while the officer or director is or was serving in such capacity. The maximum amount of potential future indemnification is unlimited; however, we maintain director and officer liability insurance. This insurance allows the transfer of the risk associated with our exposure and may enable us to recover a portion of any future amounts paid. We believe the fair value of these indemnification agreements is minimal. Accordingly, we did not record any liabilities associated with these indemnification agreements at December 31, 2019 or 2018.

### Other commitments

In the normal course of business, we enter into various purchase commitments primarily related to service agreements and laboratory supplies. At December 31, 2019, our total future payments under noncancelable unconditional purchase commitments having a remaining term of over one year were as follows (in thousands):

	<b>Amount</b>
2020	\$ 3,278
2021	1,064
2022	41
Total	\$ 4,383

### Contingencies

We were not a party to any material legal proceedings at December 31, 2019, or at the date of this report. We may from time to time become involved in various legal proceedings and claims arising in the ordinary course of business, and the resolution of any such claims could be material.

## 9. Stockholders' equity

### Shares outstanding

Shares of convertible preferred and common stock were as follows (in thousands):

	<b>Year Ended December 31,</b>		
	<b>2019</b>	<b>2018</b>	<b>2017</b>
<b>Convertible preferred stock:</b>			
Shares outstanding, beginning of period	3,459	3,459	—
Convertible preferred stock issued in private placement	—	—	3,459
Conversion into common stock	(3,334)	—	—
Shares outstanding, end of period	125	3,459	3,459
<b>Common stock:</b>			
Shares outstanding, beginning of period	75,481	53,597	41,144
Common stock issued in private placement	—	—	5,188
Common stock issued in connection with public offering	11,136	17,103	—
Common stock issued on exercise of stock options, net	468	351	387
Common stock issued pursuant to vesting of RSUs	2,683	1,369	925
Common stock issued pursuant to exercises of warrants	31	1,099	232
Common stock issued pursuant to employee stock purchase plan	455	566	379
Common stock issued pursuant to business combinations	5,208	1,022	5,176
Common stock issued pursuant to securities purchase agreement	—	374	—
Common stock issued upon conversion of preferred stock	3,334	—	—
Other	—	—	166
Shares outstanding, end of period	98,796	75,481	53,597

### **2018 Sales Agreement**

In August 2018, we entered into a Common Stock Sales Agreement (the “2018 Sales Agreement”) with Cowen and Company, LLC (“Cowen”), under which we could offer and sell from time to time at our sole discretion shares of our common stock through Cowen as our sales agent, in an aggregate amount not to exceed \$75.0 million. Cowen may sell the shares by any method permitted by law deemed to be an “at the market” offering as defined in Rule 415 of the Securities Act of 1933, including without limitation sales made directly on The New York Stock Exchange, and also may sell the shares in privately negotiated transactions, subject to our prior approval. Per the terms of the agreement, Cowen receives a commission equal to 3% of the gross proceeds of the sales price of all shares sold through it as sales agent under the 2018 Sales Agreement. In March 2019, we amended the 2018 Sales Agreement to increase the aggregate amount of our common stock to be sold under this agreement to an amount not to exceed \$175.0 million. During 2018, we sold a total of 4.3 million shares of common stock under the 2018 Sales Agreement at an average price of \$14.13 per share, for aggregate gross proceeds of \$61.1 million and net proceeds of \$58.9 million. During the year ended December 31, 2019, we sold a total of 0.8 million shares of common stock under the 2018 Sales Agreement at an average price of \$25.71 per share, for gross proceeds of \$20.2 million and net proceeds of \$19.5 million.

### **Public offerings**

In March 2019, we sold, in an underwritten public offering, an aggregate of 10.4 million shares of our common stock at a price of \$19.00 per share, for gross proceeds of \$196.7 million and net proceeds of \$184.5 million.

In April 2018, we sold, in an underwritten public offering, an aggregate of 12.8 million shares of our common stock at a price of \$4.50 per share, for gross proceeds of \$57.5 million and net proceeds of \$53.5 million.

### **Private placement**

In August 2017, in a private placement to certain accredited investors, we issued 5.2 million shares of common stock at a price of \$8.50 per share, and 3.5 million shares of our Series A convertible preferred stock at a price of \$8.50 per share, for gross proceeds of approximately \$73.5 million and net proceeds of \$68.9 million. The Series A preferred stock is convertible into common stock on a one-for-one basis, subject to adjustment for events such as stock splits, combinations and the like. During the year ended December 31, 2019, 3.3 million shares of Series A convertible preferred stock were converted to 3.3 million shares of common stock.

### **Common stock warrants**

As of December 31, 2019, we had outstanding warrants to purchase common stock as follows:

<b>Warrant</b>	<b>Issuance Date</b>	<b>Expiration Date</b>	<b>Exercise Price Per Share</b>	<b>Number of Shares of Common Stock Underlying Warrants</b>
Warrants issued in exchange for CombiMatrix Series F warrants	November 2017	March 2021	\$ 5.95	377,735
Warrants issued to lender under a 2017 loan agreement	March 2017	March 2027	\$ 10.27	116,845
Warrants issued to lender under 2017 loan agreement - 2018 amendment	March 2018	March 2028	\$ 7.02	85,482
				<u>580,062</u>

The exercise price of warrants issued in exchange for CombiMatrix Series F warrants was determined pursuant to the terms of the acquisition. The CombiMatrix Series D warrants expired during the year ended December 31, 2018. The exercise price of the warrants issued to the lender under the 2017 Loan Agreement was the closing price of Invitae's common stock on the date of the agreements.

## 10. Stock incentive plans

### Stock incentive plans

In 2010, we adopted the 2010 Incentive Plan (the "2010 Plan"). The 2010 Plan provides for the granting of stock-based awards to employees, directors and consultants under terms and provisions established by our Board of Directors. Under the terms of the 2010 Plan, options may be granted at an exercise price not less than fair market value. For employees holding more than 10% of the voting rights of all classes of stock, the exercise prices for incentive and nonstatutory stock options must be at least 110% of fair market of the common stock on the grant date, as determined by our Board of Directors. The terms of options granted under the 2010 Plan may not exceed ten years.

In January 2015, we adopted the 2015 Stock Incentive Plan (the "2015 Plan"), which became effective upon the closing of our initial public offering ("IPO"). Shares outstanding under the 2010 Plan were transferred to the 2015 Plan upon effectiveness of the 2015 Plan. The 2015 Plan provides for automatic annual increases in shares available for grant, beginning on January 1, 2016 through January 1, 2025. In addition, shares subject to awards under the 2010 Plan that are forfeited or terminated will be added to the 2015 Plan. The 2015 Plan provides for the grant of incentive stock options, nonstatutory stock options, restricted stock awards, stock units, stock appreciation rights and other forms of equity compensation, all of which may be granted to employees, including officers, non-employee directors and consultants. Additionally, the 2015 Plan provides for the grant of cash-based awards. In June 2019, we amended and restated the 2015 Plan to create a pool of shares to be awarded solely as a material inducement to employees.

Options granted generally vest over a period of four years. Typically, the vesting schedule for options granted to newly hired employees provides that 1/4 of the award vests upon the first anniversary of the employee's date of hire, with the remainder of the award vesting monthly thereafter at a rate of 1/48 of the total shares subject to the option. All other options typically vest in equal monthly installments over the four-year vesting schedule.

RSUs generally vest over a period of three years. Typically, the vesting schedule for RSUs provides that 1/3 of the award vests upon each anniversary of the grant date, with certain awards that include a portion that vests immediately upon grant. In June 2019, we granted Time-based RSUs in connection with the acquisition of Singular Bio which vest in three equal installments over a period of 18 months and PRSUs that vest based on the achievement of performance conditions; see further details in Note 4, "Business combinations."

Under our management incentive compensation plan, in July 2019 we granted PRSUs to our executive officers as well as other specified senior level employees based on the level of achievement of a specified 2019 revenue goal. These PRSUs will vest beginning in 2020 over a period of two years and may range from 0% to 115% of the target amount of 1.0 million shares. As of December 31, 2019, these PRSUs had a fair value of \$18.0 million based on an estimated issuance of 0.8 million shares and expectation of achievement of the performance conditions, of which \$6.5 million was recorded as stock-based compensation expense during the year ended December 31, 2019. No PRSUs were granted during the years ended December 31, 2018 and 2017.

Activity under the 2010 Plan and the 2015 Plan is set forth below (in thousands, except per share amounts and years):

	Shares Available For Grant	Stock Options Outstanding	Weighted-Average Exercise Price Per Share	Weighted-Average Remaining Contractual Life (years)	Aggregate Intrinsic Value
Balance at December 31, 2018	118	3,855	\$ 8.54	6.8	\$ 9,927
Additional shares reserved	13,019	—			
Options granted	(193)	193	\$ 24.16		
Options cancelled	38	(38)	\$ 13.24		
Options exercised	—	(468)	\$ 7.38		
RSUs and PRSUs granted <sup>(1)</sup>	(7,785)	—			
RSUs and PRSUs cancelled	247	—			
Balance at December 31, 2019	5,444	3,542	\$ 9.49	6.1	\$ 24,966
Options exercisable at December 31, 2019		3,019	\$ 8.77	5.8	\$ 22,399
Options vested and expected to vest at December 31, 2019		3,474	\$ 9.38	6.1	\$ 24,682



<sup>(1)</sup> Includes the Time-based RSUs and PRSUs granted as a part of the Singular Bio acquisition which are based on a fixed dollar value. The number of shares issued will be variable until the awards vest. See further details in Note 4, "Business combinations."

The aggregate intrinsic value is calculated as the difference between the exercise price of the underlying stock options and the fair value of our common stock for stock options that were in-the-money.

The weighted-average fair value of options to purchase common stock granted was \$14.52, \$4.87 and \$5.82 in the years ended December 31, 2019, 2018 and 2017, respectively.

The total grant-date fair value of options to purchase common stock vested was \$4.3 million, \$5.9 million and \$6.9 million in the year ended December 31, 2019, 2018, and 2017, respectively.

The intrinsic value of options to purchase common stock exercised was \$6.3 million, \$1.7 million and \$2.1 million in the years ended December 31, 2019, 2018 and 2017, respectively.

The following table summarizes RSU activity, which includes the Time-based RSUs and PRSUs granted in connection with our acquisition of Singular Bio and PRSUs granted related to our management incentive compensation plan (in thousands, except per share data):

	Number of Shares	Weighted-Average Grant Date Fair Value Per Share
Balance at December 31, 2018	4,031	\$ 8.35
RSUs granted	1,599	\$ 20.98
Time-based RSUs and PRSUs granted - Singular Bio <sup>(1)</sup>	5,231	\$ 16.16
PRSUs granted	955	\$ 22.62
RSUs vested	(2,684)	\$ 13.25
RSUs cancelled	(247)	\$ 11.97
Balance at December 31, 2019	<u>8,885</u>	<u>\$ 15.17</u>

<sup>(1)</sup> The Time-based RSUs and PRSUs granted as a part of the Singular Bio acquisition in June 2019 are based on a fixed dollar value. The number of shares issued and weighted-average grant date fair value per share will be variable until the awards vest. See further details in Note 4, "Business combinations."

### **2015 employee stock purchase plan**

In January 2015, we adopted the 2015 Employee Stock Purchase Plan (the "ESPP"), which became effective upon the closing of the IPO. Employees participating in the ESPP may purchase common stock at 85% of the lesser of the fair market value of common stock on the purchase date or last trading day preceding the offering date. At December 31, 2019, cash received from payroll deductions pursuant to the ESPP was \$1.0 million.

The ESPP provides for automatic annual increases in shares available for grant, beginning on January 1, 2016 and continuing through January 1, 2025. At December 31, 2019, a total of 0.6 million shares of common stock are reserved for issuance under the ESPP.

### **Stock-based compensation**

We use the grant date fair value of our common stock to value options when granted. In determining the fair value of stock options and ESPP purchases, we use the Black-Scholes option-pricing model and, for stock options, the assumptions discussed below. Each of these inputs is subjective and its determination generally requires significant judgment. The fair value of RSU and PRSU awards is based on the grant date share price. Compensation cost is recognized as expense on a straight-line basis over the vesting period for options and RSUs and on an accelerated basis for PRSUs.

*Expected term*—The expected term represents the period that our stock-based awards are expected to be outstanding and is determined using the simplified method (based on the midpoint between the vesting date and the end of the contractual term).

*Expected volatility*—We estimate expected volatility based on the historical volatility of our common stock over a period equal to the expected term of stock option grants and RSUs and over the expected six-month term ESPP purchase periods.

*Risk-free interest rate*—The risk-free interest rate is based on the U.S. Treasury zero coupon issues in effect at the time of grant for periods corresponding with the expected term of the option.

*Dividend yield*—We have never paid dividends on our common stock and have no plans to pay dividends on our common stock. Therefore, we used an expected dividend yield of zero.

The fair value of share-based payments for stock options granted to employees and directors was estimated on the date of grant using the Black-Scholes option-pricing model based on the following assumptions:

	Year Ended December 31,		
	2019	2018	2017
Expected term (in years)	6.0	6.0	6.0
Expected volatility	64.2%	59.6%	72.6%
Risk-free interest rate	2.6%	2.8%	2.0%

The fair value of shares purchased pursuant to the ESPP is estimated using the Black-Scholes option pricing model. For the years ended December 31, 2019, 2018 and 2017, the weighted-average grant date fair value per share for the ESPP was \$6.05, \$3.26 and \$2.51, respectively.

The fair value of the shares purchased pursuant to the ESPP was estimated using the following assumptions:

	Year Ended December 31,		
	2019	2018	2017
Expected term (in years)	0.5	0.5	0.5
Expected volatility	66.3%	71.7%	52.5%
Risk-free interest rate	2.0%	2.1%	1.2%

The following table summarizes stock-based compensation expense for the years ended December 31, 2019, 2018 and 2017, included in the consolidated statements of operations (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Cost of revenue	\$ 4,563	\$ 2,960	\$ 2,093
Research and development	52,450	7,017	6,158
Selling and marketing	7,641	4,887	3,956
General and administrative	11,294	5,986	7,014
Total stock-based compensation expense	\$ 75,948	\$ 20,850	\$ 19,221

At December 31, 2019, unrecognized compensation expense related to unvested stock options, net of estimated forfeitures, was \$3.2 million, which we expect to recognize on a straight-line basis over a weighted-average period of 2.0 years. Unrecognized compensation expense related to RSUs, including PRSUs, at December 31, 2019, net of estimated forfeitures, was \$85.2 million, which we expect to recognize on a straight-line basis over a weighted-average period of 1.1 years.

## 11. Income taxes

We recorded a benefit for income taxes in the years ended December 31, 2019, 2018 and 2017. The components of net loss before taxes by U.S. and foreign jurisdictions are as follows (in thousands):

	Year Ended December 31,		
	2019	2018	2017
United States	\$ 260,531	\$ 132,194	\$ 124,108
Foreign	(116)	(39)	1,128
Total	\$ 260,415	\$ 132,155	\$ 125,236

The components of the provision for income taxes are as follows (in thousands):

	Year Ended December 31,		
	2019	2018	2017
<b>Current:</b>			
Federal	\$ —	\$ —	\$ —
Foreign	85	62	—
Total current benefit for income taxes	85	62	—
<b>Deferred:</b>			
Federal	(16,011)	(2,862)	(1,704)
State	(2,524)	—	(152)
Total deferred benefit for income taxes	(18,535)	(2,862)	(1,856)
Total income tax benefit	\$ (18,450)	\$ (2,800)	\$ (1,856)

The following table presents a reconciliation of the tax expense computed at the statutory federal rate and our tax expense for the periods presented:

	Year Ended December 31,		
	2019	2018	2017
U.S. federal taxes at statutory rate	21.0 %	21.0 %	34.0 %
State taxes (net of federal benefit)	3.7 %	5.2 %	3.3 %
Stock-based compensation	1.3 %	(0.7)%	(1.1)%
Research and development credits	— %	2.7 %	— %
Non-deductible expenses	(1.6)%	(0.6)%	— %
Foreign tax differential	— %	— %	(0.3)%
Other	— %	— %	— %
Change in valuation allowance	(17.3)%	(25.5)%	(34.4)%
Change in deferred—Tax Reform	— %	— %	(39.0)%
Change in valuation allowance—Tax Reform	— %	— %	39.0 %
Total	7.1 %	2.1 %	1.5 %

The tax effects of temporary differences and carryforwards that give rise to significant portions of the deferred tax assets are as follows (in thousands):

	As of December 31,	
	2019	2018
<b>Deferred tax assets:</b>		
Net operating loss carryforwards	\$ 173,182	\$ 76,972
Tax credits	—	15
Revenue recognition differences	3,070	47,650
Leasing Liabilities	11,626	—
Accruals and other	16,621	7,262
Gross deferred tax assets	204,499	131,899
Valuation allowance	(145,318)	(121,954)
Total deferred tax assets	59,181	9,945
<b>Deferred tax liabilities:</b>		
Amortization and depreciation	(31,037)	(9,945)
Convertible Senior Notes	(17,720)	—
Leasing Assets	(10,424)	—
Total deferred tax liabilities	(59,181)	(9,945)
Net deferred tax assets	\$ —	\$ —

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 (the "Tax Act") was signed into law making significant changes to the Internal Revenue Code. Changes included among other items, a reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%. Although the Tax Act was generally effective January 1, 2018, GAAP required recognition of the tax effects of new legislation during the reporting period that includes the enactment date, which was December 22, 2017. As a result of the lower corporate tax rate enacted as part of the Tax Act, during 2017, the Company recorded a provisional estimate to reduce deferred tax assets by \$48.8 million offset by a corresponding reduction in the valuation allowance resulting in no net impact to our income tax benefit or expense.

On December 22, 2017, the Securities and Exchange Commission issued Staff Accounting Bulletin No. 118 ("SAB 118") to address the application of U.S. GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Tax Act. In accordance with SAB 118, during 2017, we recorded a provisional estimate which resulted in a \$48.8 million reduction in deferred tax assets and in the fourth quarter of 2018, we completed our analysis of the impact of the Tax Act and determined that no material adjustments were required to the provisional amounts previously recorded.

We established a full valuation allowance against our deferred tax assets due to the uncertainty surrounding realization of such assets. Our valuation allowance increased by \$23.4 million, \$26.3 million, and \$2.0 million during the years ended December 31, 2019, 2018 and 2017, respectively.

As of December 31, 2019, we had net operating loss carryforwards of approximately \$705.9 million and \$388.9 million available to reduce future taxable income, if any, for Federal and state income tax purposes, respectively. Of the \$705.9 million, \$285.1 million will begin to expire in 2030 while \$420.8 million have no expiration date. The state net operating loss carryforwards will begin to expire in 2030.

As of December 31, 2019, we had research and development credit carryforwards of approximately \$15.3 million and \$11.7 million available to reduce our future tax liability, if any, for Federal and state income tax purposes, respectively. The Federal credit carryforwards begin to expire in 2030. California credit carryforwards have no expiration date.

Internal Revenue Code ("IRC") section 382 places a limitation (the "Section 382 limitation" or "annual limitation") on the amount of taxable income that can be offset by net operating loss carryforwards after a change in control (generally greater than 50% change in ownership) of a loss corporation. Similar provisions exist for states. In addition, and as a result of the acquisitions of Good Start Genetics and CombiMatrix in 2017 and Singular Bio, Jungla and Clear Genetics in 2019, tax loss carryforwards from acquired entities are also subject to the Section 382 limitation due to the change in control in the acquired entities in the current year.

As a result of equity issued in connection with our acquisitions, we performed a section 382 analysis with respect to our legacy operating loss and credit carryforwards. We concluded while an ownership change occurred as defined under IRC section 382, none of our legacy carryforwards would expire unused solely as a result of annual limitations imposed on the use of the carryforwards under IRC sections 382 and 383.

As of December 31, 2019, we had unrecognized tax benefits of \$27.0 million, which primarily relates to research and development credits, none of which would currently affect our effective tax rate if recognized due to the Company's deferred tax assets being fully offset by a valuation allowance. Unrecognized tax benefits are not expected to change in the next 12 months.

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows (in thousands):

	Year ended December 31,		
	2019	2018	2017
Unrecognized tax benefits, beginning of period	\$ 16,375	\$ 10,561	\$ 7,791
Gross increases—current period tax positions	10,311	5,686	2,552
Gross increases—prior period tax positions	299	128	218
Unrecognized tax benefits, end of period	<u>\$ 26,985</u>	<u>\$ 16,375</u>	<u>\$ 10,561</u>

Our policy is to include penalties and interest expense related to income taxes as a component of tax expense. We have not accrued interest and penalties related to the unrecognized tax benefits reflected in the financial statements for the years ended December 31, 2019, 2018 and 2017.

Our major tax jurisdictions are the United States and California. All of our tax years will remain open for examination by the Federal and state tax authorities for three and four years, respectively, from the date of utilization of the net operating loss or research and development credit. We do not have any tax audits pending.

## 12. Net loss per share

The following table presents the calculation of basic and diluted net loss per share (in thousands, except per share data):

	Year ended December 31,		
	2019	2018	2017
Net loss	\$ (241,965)	\$ (129,355)	\$ (123,380)
Shares used in computing net loss per share, basic and diluted	90,859	66,747	46,512
Net loss per share, basic and diluted	\$ (2.66)	\$ (1.94)	\$ (2.65)

The following common stock equivalents have been excluded from diluted net loss per share because their inclusion would be anti-dilutive (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Shares of common stock subject to outstanding options	3,662	4,028	4,485
Shares of common stock subject to outstanding warrants	592	1,513	343
Shares of common stock subject to outstanding RSUs	5,293	3,476	2,067
Shares of common stock subject to outstanding PRSUs	1,860	—	41
Shares of common stock pursuant to ESPP	239	294	146
Shares of common stock underlying Series A convertible preferred stock	702	3,459	1,421
Shares of common stock subject to Convertible Senior Notes exercise	3,612	—	—
Total shares of common stock equivalents	15,960	12,770	8,503

## 13. Geographic information

Revenue by country is determined based on the billing address of the customer and is summarized as follows (in thousands):

	Year Ended December 31,		
	2019	2018	2017
United States	\$ 202,550	\$ 138,239	\$ 62,446
Canada	4,356	4,206	3,226
Rest of world	9,918	5,254	2,549
Total revenue	\$ 216,824	\$ 147,699	\$ 68,221

As of December 31, 2019 and 2018, all long-lived assets were located in the United States.

#### 14. Selected quarterly data (unaudited)

The following table summarizes our quarterly financial information for 2019 and 2018 (in thousands, except per share amounts):

	Three Months Ended			
	March 31, 2019	June 30, 2019	September 30, 2019	December 31, 2019
Revenue	\$ 40,553	\$ 53,475	\$ 56,511	\$ 66,285
Cost of revenue	\$ 21,254	\$ 28,006	\$ 32,120	\$ 36,723
Loss from operations	\$ (36,207)	\$ (51,886)	\$ (76,983)	\$ (79,036)
Net loss <sup>(1)</sup>	\$ (37,677)	\$ (48,676)	\$ (78,707)	\$ (76,905)
Net loss per share, basic and diluted <sup>(2)</sup>	\$ (0.47)	\$ (0.54)	\$ (0.82)	\$ (0.79)

	Three Months Ended			
	March 31, 2018	June 30, 2018	September 30, 2018	December 31, 2018
Revenue	\$ 27,671	\$ 37,306	\$ 37,366	\$ 45,356
Cost of revenue	\$ 18,076	\$ 20,447	\$ 20,441	\$ 21,141
Loss from operations	\$ (36,475)	\$ (30,068)	\$ (30,110)	\$ (25,904)
Net loss <sup>(1)</sup>	\$ (36,120)	\$ (31,671)	\$ (31,723)	\$ (29,841)
Net loss per share, basic and diluted <sup>(2)</sup>	\$ (0.66)	\$ (0.47)	\$ (0.45)	\$ (0.40)

<sup>(1)</sup> Includes \$8.9 million and \$5.3 million of debt extinguishment costs during the three months ended September 30, 2019 and December 31, 2018, respectively. See Note 8, "Commitments and contingencies" for further information.

<sup>(2)</sup> Net loss per share is computed independently for each of the quarters presented. Therefore, the sum of quarterly net loss per share information may not equal annual net loss per share.

#### ITEM 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

Not applicable.

#### ITEM 9A. Controls and Procedures.

##### Evaluation of disclosure controls and procedures

We maintain "disclosure controls and procedures," as such term is defined in Rule 13a-15(e) under the Securities Exchange Act of 1934, or Exchange Act, that are designed to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in Securities and Exchange Commission rules and forms, and that such information is accumulated and communicated to our management, including our principal executive officer and principal financial and accounting officer, as appropriate, to allow timely decisions regarding required disclosure. In designing and evaluating our disclosure controls and procedures, management recognized that disclosure controls and procedures, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the disclosure controls and procedures are met. Our disclosure controls and procedures have been designed to meet reasonable assurance standards. Additionally, in designing disclosure controls and procedures, our management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible disclosure controls and procedures. The design of any disclosure controls and procedures also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions.

Based on their evaluation as of the end of the period covered by this Annual Report on Form 10-K, our Chief Executive Officer (our principal executive officer) and Chief Financial Officer (our principal financial and accounting officer) have concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

##### Changes in internal control over financial reporting

There was no change in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) identified in connection with the evaluation described in Item 9A above that occurred during our last fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

**Management's annual report on internal control over financial reporting**

Our management is responsible for establishing and maintaining internal control over our financial reporting. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Because of inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues, if any, within an organization have been detected. Projections of any evaluation of the effectiveness of internal control 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 policies or procedures may deteriorate. Our management, 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. In making this assessment, our management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission, or COSO, in Internal Control—Integrated Framework (2013 Framework). Based on the assessment using those criteria, our management concluded that, as of December 31, 2019, our internal control over financial reporting was effective. Our independent registered public accounting firm, Ernst & Young LLP, has issued an audit report with respect to our internal control over financial reporting, which appears in Part II, Item 8 of this Annual Report on Form 10-K.

## Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors of Invitae Corporation

### Opinion on Internal Control Over Financial Reporting

We have audited Invitae Corporation's internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control - Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Invitae Corporation (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of Invitae Corporation as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive loss, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes (collectively referred to as the "consolidated financial statements") and our report dated February 28, 2020 expressed an unqualified opinion thereon.

### Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB. We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

### Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to 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.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2013.

Redwood City, California  
February 28, 2020



**ITEM 9B. Other Information.**

None.

## PART III

### **ITEM 10. Directors, Executive Officers and Corporate Governance.**

The information required by this item with respect to directors is incorporated by reference from the information under the caption "Election of Directors," contained in our proxy statement to be filed with the Securities and Exchange Commission no later than 120 days from the end of our fiscal year ended December 31, 2019 in connection with the solicitation of proxies for our 2020 Annual Meeting of Stockholders, or the Proxy Statement. Certain information required by this item concerning executive officers is set forth in Part I of this Report under the caption "Information About our Executive Officers" and is incorporated herein by reference.

There have been no material changes to the procedures by which stockholders may recommend nominees to our Board of Directors.

Item 405 of Regulation S-K calls for disclosure of any known late filing or failure by an insider to file a report required by Section 16(a) of the Exchange Act. To the extent disclosure for delinquent reports is being made, it can be found under the caption "Delinquent Section 16(a) Reports" in the Proxy Statement and is incorporated herein by reference.

Our board of directors has adopted a code of business conduct and a code of ethics for senior financial officers applicable to our Chief Executive Officer and Chief Financial Officer as well as other key management employees addressing ethical issues. The code of business conduct and the code of ethics are each posted on our website [www.invitae.com](http://www.invitae.com). The code of business conduct and the code of ethics can only be amended by the approval of a majority of our board of directors. Any waiver to the code of business conduct for an executive officer or director or any waiver of the code of ethics may only be granted by our board of directors or our nominating and corporate governance committee and must be timely disclosed as required by applicable law. We have implemented whistleblower procedures that establish formal protocols for receiving and handling complaints from employees. Any concerns regarding accounting or auditing matters reported under these procedures will be communicated promptly to our audit committee. Stockholders may request a free copy of our code of business conduct and code of ethics by contacting Invitae Corporation, Attention: Chief Financial Officer, 1400 16th Street, San Francisco, California 94103. None of the materials on, or accessible through, our website is part of this report or incorporated by reference herein.

To date, there have been no waivers under our code of business conduct or code of ethics. We intend to disclose future amendments to certain provisions of our code of business conduct or code of ethics or waivers of such codes granted to executive officers and directors on our website at <http://www.invitae.com> within four business days following the date of such amendment or waiver.

Our Board of Directors has appointed an Audit Committee, comprised of Eric Aguiar, Geoffrey S. Crouse and Christine M. Gorjanc. The Board of Directors has determined that each of the members of our Audit Committee qualifies as an Audit Committee Financial Expert under the definition outlined by the Securities and Exchange Commission. In addition, each of the members of the Audit Committee qualifies as an "independent director" under the current rules of the New York Stock Exchange and Securities and Exchange Commission rules and regulations.

### **ITEM 11. Executive Compensation.**

The information required by this item is incorporated by reference from the information under the captions "Election of Directors-Director Compensation" and "Executive Compensation" contained in the Proxy Statement.

### **ITEM 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.**

The information required by this item is incorporated by reference to the disclosure appearing under the headings "Security Ownership of Certain Beneficial Owners and Management" and "Equity Compensation Plan Information" contained in the Proxy Statement.

### **ITEM 13. Certain Relationships and Related Transactions, and Director Independence.**

The information required by this item is incorporated by reference from the information under the caption "Election of Directors-Certain Relationships and Related Transactions," "Election of Directors-Corporate Governance" and "Director Independence" contained in the Proxy Statement.

### **ITEM 14. Principal Accountant Fees and Services.**

The information required by this item is incorporated by reference from the information under the caption "Ratification of the Appointment of Independent Registered Public Accounting Firm" contained in the Proxy Statement.

## PART IV

### ITEM 15. Exhibits and Financial Statement Schedules.

- (a) Documents filed as part of this report
1. *Financial Statements*: Reference is made to the Index to Financial Statements of Invitae Corporation included in Item 8 of Part II hereof.
  2. *Financial Statement Schedules*: All schedules have been omitted because they are not required, not applicable, or the required information is included in the financial statements or notes thereto.
  3. *Exhibits*: See Item 15(b) below. Each management contract or compensating plan or arrangement required to be filed has been identified.
- (b) Exhibits

Exhibit Number	Description
2.1 <sup>@</sup>	<a href="#"><u>Agreement and Plan of Merger and Reorganization, dated as of June 14, 2019, by and among Invitae Corporation, Santa Barbara Merger Sub, Singular Bio, Inc. and Fortis Advisors LLC (incorporated by reference to Exhibit 2.1 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019).</u></a>
2.2 <sup>@</sup>	<a href="#"><u>Stock Purchase and Merger Agreement, dated as of July 11, 2019, by and among Invitae Corporation, Jumanji, LLC, Jungla Inc., and Fortis Advisors LLC (incorporated by reference to Exhibit 2.2 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019).</u></a>
2.3 <sup>@*</sup>	<a href="#"><u>Agreement and Plan of Merger, dated as of November 8, 2019, by and among Invitae Corporation, Catalina Merger Sub A Inc., Catalina Merger Sub B LLC, Clear Genetics, Inc. and Shareholder Representative Services LLC.</u></a>
3.1	<a href="#"><u>Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed February 23, 2015).</u></a>
3.1.1	<a href="#"><u>Certificate of Designation of Preferences, Rights and Limitations of Series A Convertible Preferred Stock of Invitae Corporation (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed August 1, 2017).</u></a>
3.2	<a href="#"><u>Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.2 to the Registrant's Current Report on Form 8-K filed February 23, 2015).</u></a>
4.1	<a href="#"><u>Form of Common Stock Certificate (incorporated by reference to Exhibit 4.1 to the Registrant's Registration Statement on Form S-1 (File No. 333-201433), as amended, declared effective on February 11, 2015).</u></a>
4.2 <sup>*</sup>	<a href="#"><u>Description of Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934.</u></a>
4.3	<a href="#"><u>Amended and Restated Registration Rights Agreement, dated as of July 31, 2017 (incorporated by reference to Exhibit 10.4 to the Registrant's Current Report on Form 8-K filed August 1, 2017).</u></a>
4.4	<a href="#"><u>Form of Invitae Corporation Series F Warrant (incorporated by reference to Exhibit 4.4 to the Registrant's Registration Statement on Form S-4 (File No. 333-220447), as amended, filed September 13, 2017).</u></a>
4.5	<a href="#"><u>Form of Invitae Corporation Series F Warrant Agent Agreement (incorporated by reference to Exhibit 4.5 to the Registrant's Registration Statement on Form S-4 (File No. 333-220447), as amended, filed September 13, 2017).</u></a>
4.6	<a href="#"><u>Form of Registration Rights Agreement by and among Invitae Corporation and certain stockholders of Singular Bio, Inc. (incorporated by reference to Exhibit 10.4 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019).</u></a>
4.7	<a href="#"><u>Form of Registration Rights Agreement by and among Invitae Corporation and certain stockholders of Jungla Inc. (incorporated by reference to Exhibit 10.5 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019).</u></a>
4.8 <sup>*</sup>	<a href="#"><u>Form of Registration Rights Agreement by and among the Registrant and certain stockholders of Clear Genetics, Inc.</u></a>
4.9	<a href="#"><u>Indenture dated as of September 10, 2019, between Invitae Corporation and U.S. Bank National Association, as trustee (including form of Note) (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K filed September 11, 2019).</u></a>

Exhibit Number	Description
10.1 <sup>#</sup>	<a href="#">Form of Indemnification Agreement between Invitae Corporation and its officers and directors (incorporated by reference to Exhibit 10.1 to the Registrant's Registration Statement on Form S-1 (File No. 333-201433), as amended, declared effective on February 11, 2015).</a>
10.2 <sup>#</sup>	<a href="#">2010 Stock Plan (incorporated by reference to Exhibit 10.2 to the Registrant's Registration Statement on Form S-1 (File No. 333-201433), as amended, declared effective on February 11, 2015).</a>
10.3 <sup>#</sup>	<a href="#">Form of Notice of Stock Option Grant and Stock Option Agreement—Standard Exercise for awards granted under 2010 Stock Incentive Plan (incorporated by reference to Exhibit 10.3 to the Registrant's Registration Statement on Form S-1 (File No. 333-201433), as amended, declared effective on February 11, 2015).</a>
10.4 <sup>#</sup>	<a href="#">Form of Notice of Stock Option Grant and Stock Option Agreement—Early Exercise for awards granted under 2010 Stock Incentive Plan (incorporated by reference to Exhibit 10.4 to the Registrant's Registration Statement on Form S-1 (File No. 333-201433), as amended, declared effective on February 11, 2015).</a>
10.5 <sup>#</sup>	<a href="#">Invitae Corporation 2015 Stock Incentive Plan (as amended and restated as of June 11, 2019) (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019).</a>
10.6 <sup>#</sup>	<a href="#">Form of Notice of Stock Option Grant and Non-Qualified Stock Option Agreement for awards granted under the 2015 Stock Incentive Plan (incorporated by reference to Exhibit 10.6 to the Registrant's Registration Statement on Form S-1 (File No. 333-201433), as amended, declared effective on February 11, 2015).</a>
10.7 <sup>#</sup>	<a href="#">Form of Notice of Restricted Stock Award and Restricted Stock Agreement for awards granted under the 2015 Stock Incentive Plan (incorporated by reference to Exhibit 10.7 to the Registrant's Registration Statement on Form S-1 (File No. 333-201433), as amended, declared effective on February 11, 2015).</a>
10.8 <sup>#</sup>	<a href="#">Form of Notice of Restricted Stock Unit Award and Restricted Stock Unit Agreement for Awards Granted under the 2015 Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed August 6, 2015).</a>
10.9 <sup>#</sup>	<a href="#">Employee Stock Purchase Plan (incorporated by reference to Exhibit 10.8 to the Registrant's Registration Statement on Form S-1 (File No. 333-201433), as amended, declared effective on February 11, 2015).</a>
10.10 <sup>#</sup>	<a href="#">Form of Notice of Time-Based Restricted Stock Unit Award and Time-Based Restricted Stock Unit Agreement for Awards Granted under the Invitae Corporation 2015 Stock Incentive Plan (Inducement) (incorporated by reference to Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019).</a>
10.11 <sup>#A</sup>	<a href="#">Form of Notice of Performance-Based Restricted Stock Unit Award and Performance-Based Restricted Stock Unit Agreement for Awards under the Invitae Corporation 2015 Stock Incentive Plan (Inducement) (incorporated by reference to Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019).</a>
10.12 <sup>#</sup>	<a href="#">Offer Letter, dated as of May 19, 2017, between Invitae Corporation and Shelly Guyer (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed June 1, 2017).</a>
10.13	<a href="#">Lease Agreement dated as of September 2, 2015 by and between Invitae Corporation and 1400 16th Street LLC (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed September 4, 2015).</a>
10.14	<a href="#">Form of Warrant to Purchase Common Stock between Oxford Capital, LLC and Invitae Corporation (incorporated by reference to Exhibit 10.14 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2016).</a>
10.15	<a href="#">Sales Agreement dated as of August 9, 2018 between Invitae Corporation and Cowen and Company, LLC (incorporated by reference to Exhibit 10.19 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2018).</a>
10.16	<a href="#">Amendment No. 1 to Sales Agreement dated as of February 28, 2019 between Invitae Corporation and Cowen and Company, LLC (incorporated by reference to Exhibit 1.2 to the Registrant's Current Report on Form 8-K filed March 1, 2019).</a>
21.1 <sup>*</sup>	<a href="#">List of Subsidiaries.</a>
23.1 <sup>*</sup>	<a href="#">Consent of Independent Registered Public Accounting Firm.</a>
24.1 <sup>*</sup>	Power of Attorney (contained on the signature page to this Form 10-K).

- 31.1\* [Principal Executive Officer's Certifications Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.](#)
- 31.2\* [Principal Financial and Accounting Officer's Certifications Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.](#)
- 32.1\* [Certification Pursuant to 18 U.S.C. § 1350 \(Section 906 of Sarbanes-Oxley Act of 2002\).](#)

Exhibit Number	Description
32.2*	<a href="#">Certification Pursuant to 18 U.S.C. § 1350 (Section 906 of Sarbanes-Oxley Act of 2002).</a>
101.INS*	Inline XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH*	Inline XBRL Taxonomy Extension Schema
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase
101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase
104	Cover Page Interactive Data File (the cover page XBRL tags are embedded within the Inline XBRL document and included as Exhibit 101).

# Indicates management contract or compensatory plan or arrangement.

\* Filed herewith.

@ The schedules and exhibits to this agreement have been omitted pursuant to Item 601(b)(2) of Regulation S-K. A copy of any omitted schedule and/or exhibit will be furnished to the SEC upon request.

+ In accordance with Item 601(b)(32)(ii) of Regulation S-K and SEC Release No. 34-47986, the certifications furnished in Exhibits 32.1 and 32.2 hereto are deemed to accompany this Form 10-K and will not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934 (the "Exchange Act") or deemed to be incorporated by reference into any filing under the Exchange Act or the Securities Act of 1933 except to the extent that the registrant specifically incorporates it by reference.

^ Portions of this Exhibit have been redacted in accordance with Item 601 of Regulation S-K

Copies of the above exhibits not contained herein are available to any stockholder, upon payment of a reasonable per page fee, upon written request to: Chief Financial Officer, Invitae Corporation, 1400 16th Street, San Francisco, California 94103.

(c) Financial Statement Schedules: Reference is made to Item 15(a) 2 above.

**ITEM 16. Form 10-K Summary.**

Not applicable.



[\*] Indicates that certain information in this exhibit has been excluded because it is both (i) not material and (ii) would be competitively harmful if publicly disclosed.

EXECUTION VERSION

**AGREEMENT AND PLAN OF MERGER**

among

**INVITAE CORPORATION,  
CATALINA MERGER SUB A INC.,  
CATALINA MERGER SUB B LLC,  
CLEAR GENETICS, INC.**

and

**SHAREHOLDER REPRESENTATIVE SERVICES LLC,**  
solely in its capacity as HOLDERS' REPRESENTATIVE

November 8, 2019

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## **LIST OF EXHIBITS**

- Exhibit A – Form of Written Consent and Joinder Agreement
- Exhibit B – Form of Certificate of Reverse Merger
- Exhibit C – Form of Certificate of Forward Merger
- Exhibit D – List of Continuing Employees
- Exhibit E – Form of Employment Documents
- Exhibit F – Form of Registration Rights Agreement
- Exhibit G – List of Third Party Notices

## AGREEMENT AND PLAN OF MERGER

**THIS AGREEMENT AND PLAN OF MERGER** (this “Agreement”) is entered into and dated as of November 8, 2019 (the “Agreement Date”) by and among: (i) Invitae Corporation, a Delaware corporation (“Parent”); (ii) Catalina Merger Sub A Inc., a Delaware corporation and a wholly owned subsidiary of Parent (“Merger Sub A”); (iii) Catalina Merger Sub B LLC, a Delaware limited liability company and a wholly owned subsidiary of Parent (“Merger Sub B”); (iv) Clear Genetics, Inc., a Delaware corporation (the “Company”); and (v) Shareholder Representative Services LLC, a Colorado limited liability company, solely in its capacity as the representative, agent and attorney-in-fact of the Holders (the “Holders’ Representative”), but solely with respect to the provisions expressly applicable to the Holders’ Representative as set forth herein. Each of Parent, Merger Sub A, Merger Sub B, the Company and the Holders’ Representative may be individually referred to herein as a “Party” and collectively referred to herein as the “Parties.” Capitalized terms used herein have the meanings ascribed thereto in ARTICLE I or elsewhere in this Agreement as identified in ARTICLE I.

### RECITALS

**WHEREAS**, the Company, Parent and Merger Sub A intend to effect a merger of Merger Sub A with and into the Company (the “Reverse Merger”) in accordance with this Agreement and the General Corporation Law of the State of Delaware (the “DGCL”), whereupon consummation of the Reverse Merger, Merger Sub A shall cease to exist and the Company shall become a Subsidiary of Parent;

**WHEREAS**, as part of the same overall transaction, promptly following the Reverse Merger, the Company, Parent and Merger Sub B intend to effect a merger of the Company with and into Merger Sub B (the “Forward Merger” and, together with the Reverse Merger, the “Mergers”) in accordance with this Agreement and the Delaware Limited Liability Company Act (the “DLLCA”), whereupon consummation of the Forward Merger, the Company shall cease to exist and Merger Sub B shall survive the Forward Merger as a continuing Subsidiary of Parent;

**WHEREAS**, the respective board of directors of Parent, the Company, Merger Sub A and Merger Sub B have each approved, adopted and declared advisable this Agreement and the transactions contemplated hereby, including the Mergers, in accordance with the DGCL, the DLLCA and upon the terms and subject to the conditions set forth herein;

**WHEREAS**, in connection with the transactions contemplated hereby, each option (a “Company Option”) to acquire shares of the Company’s Common Stock, par value \$0.0001 per share (the “Company Stock”) that is unexpired, unexercised and outstanding immediately prior to the Closing shall (i) become fully vested with respect to all shares exercisable thereunder (other than any Company Option held by a former Employee that is, by its terms, no longer eligible for vesting), and (ii) be cancelled in exchange for the right to receive (without interest) the consideration set forth herein;

**WHEREAS**, in connection with the transactions contemplated hereby, all shares of Company Stock subject to vesting shall become fully vested;

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**WHEREAS**, in connection with the transactions contemplated hereby, each Simple Agreement for Future Equity (a “Company SAFE”) between the Company and the holder thereof (a “Company SAFE Holder”) that is outstanding immediately prior to the Closing shall have converted in accordance with its terms into (i) shares of Company Stock, which shares shall be entitled to the right to receive (without interest) the consideration set forth herein or (ii) cash payable by the Company, and otherwise cancelled;

**WHEREAS**, in connection with the transactions contemplated hereby, that certain Convertible Promissory Note issued by the Company to the Company Noteholder on October 5, 2016 (the “Company Note”), to the extent it remains outstanding and unpaid immediately prior to the Closing, shall have converted in accordance with its terms into (i) shares of Company Stock, which shares shall be entitled to the right to receive (without interest) the consideration set forth herein or (ii) cash payable by the Company, and otherwise cancelled;

**WHEREAS**, promptly following the execution and delivery of this Agreement, and as an inducement to Parent’s willingness to enter into this Agreement, in accordance with Sections 228(a) and 228(c) of the DGCL, the Company has agreed to seek a written consent and joinder agreement in the form attached as Exhibit A hereto (a “Written Consent and Joinder Agreement”), executed by all Holders of the outstanding shares of Company Stock (including shares of Company Stock issuable upon conversion of the Company SAFEs and the Company Note), pursuant to which such Holders will do the following: (i) approve this Agreement, the Mergers and the other transactions and arrangements contemplated hereby; (ii) agree to the indemnification provisions set forth herein; (iii) make customary representations and warranties relating to an investment in shares of Parent Common Stock (including, as applicable, with the assistance of a “purchaser representative” for such purpose) if receiving shares of Parent Common Stock pursuant to this Agreement; and (iv) release the Company against certain claims;

**WHEREAS**, concurrent with the execution and delivery of this Agreement the Company has delivered to Parent a Support Agreement executed by the founders of the Company pursuant to which such founders agree to approve this Agreement, the Mergers and the other transactions and arrangements contemplated hereby and otherwise take certain actions in support thereof; and

**WHEREAS**, for U.S. federal income Tax purposes, it is intended that the Mergers contemplated herein shall be considered together as a single integrated transaction for U.S. federal income Tax purposes and that the Mergers shall qualify as a “reorganization” within the meaning of Section 368(a) of the Code, in accordance with Revenue Ruling 2001-46, 2001-2 C.B. 321.

**NOW, THEREFORE**, in consideration of the foregoing and the mutual agreements and covenants set forth below, and intending to be legally bound hereby, the Parties hereby agree as follows:

## ARTICLE I

### CERTAIN DEFINITIONS; CONSTRUCTION

1.1 Certain Definitions. The following terms shall have the following meanings in this Agreement:

“Accredited Investor” means a Person that is an “accredited investor” as defined in Rule 501 of Regulation D of the Securities Act.

“Accounting Methodology” means the accounting methods, practices and procedures used to prepare the Financial Statements.

“Action” means any claim, controversy, suit, action or cause of action, litigation, arbitration, investigation, opposition, interference, audit, hearing, demand, assessment, complaint, citation, proceeding, order or other legal proceeding (whether sounding in contract or tort or otherwise, whether civil, criminal, administrative or otherwise and whether brought at law or in equity or under arbitration or administrative regulation).

“Advisor Payments” mean any and all payments which are made in lieu of equity grants to those advisors to the Company identified in Section 3.10(a) of the Disclosure Schedule, which payments are described in Section 1.1 of the Disclosure Schedule.

“Affiliate” means, with respect to any Person, any other Person that, directly or indirectly, controls, or is controlled by, or is under common control with, such Person. For this purpose, “control” (including, with its correlative meanings, “controlled by” and “under common control with”) means the possession, directly or indirectly, of the power to direct or cause the direction of management or policies of a Person, whether through the ownership of securities or partnership or other ownership interests, by contract or otherwise. For the avoidance of doubt, from and after the Closing Date, the Company shall be deemed not to be an Affiliate of the Holders.

“Aggregate Option Payment” means the aggregate amount (net of applicable exercise prices) payable to the Company Optionholders pursuant to Section 2.7(a)(A).

“Anti-Kickback Statute” means the Federal Health Care Program Anti-Kickback Statute, 42 U.S.C. § 1320a-7b(b), and all regulations promulgated thereunder.

“Base Cash Amount” means (i) \$25,000,000 *minus* (ii) the Advisor Payments.

“Base Purchase Price” means (i) \$50,000,000 *minus* (ii) the Advisor Payments.

“Business” means the business of providing an automated web-based application (chatbots) for personalized risk assessments with respect to genetic information to healthcare providers, patients, and healthcare systems, with such tools that may include automatic collection of patient and family history, delivery of risk assessment, patient triaging, genetic counseling services, and provision of personalized healthcare information for patients and their medical practitioner.

“Business Day” means any day other than a Saturday, Sunday or any other day on which banking institutions in San Francisco, California are authorized or required by Law or order to remain closed.

“CERCLA” is defined within the definition of “Environmental Laws” below.

“Change in Control Payments” means (i) any bonus, severance or other payment that is created, accelerated, accrues or becomes payable by the Company to any present or former director, stockholder, Employee or Consultant, including pursuant to an employment agreement, Company Plan or any other Contract and (ii) without duplication of any other amounts included within the definition of Company Transaction and Bonus Expenses, any other payment, expense, or fee that accrues or becomes payable by the Company to any Person under any Contract as a result of the consummation of the Transactions (including the Mergers) or in connection with the execution and delivery of the Agreement or any other Transaction Agreement.

“Charter Documents” means, with respect to any entity, the certificate of incorporation and bylaws or similar organizational documents of such entity.

“Closing Cash” means the fair market value of all cash and cash equivalents held by the Company as of the Closing (before taking into account the consummation of the transactions contemplated hereby), determined in accordance with the Accounting Methodology, excluding, to the extent applicable, (i) outstanding (uncleared) checks, drafts, wire transfers or deposits in transit, and other debits and credits in-process, (ii) restricted balances, (iii) amounts held in escrow, (iv) amounts held in banks outside of the United States in accounts that cannot be readily expatriated due to foreign exchange controls or other applicable Laws, (v) the proceeds of any casualty loss with respect to any asset held or owned by the Company (to the extent that any such asset has not been repaired or replaced or the liability for the repair or replacement of such asset has not been paid or accrued as a current liability), and (vi) cash received with respect to unperformed work or installations and reflected as deferred revenues on the Estimated Balance Sheet.

“Closing Net Working Capital” means, as of the Closing, an amount equal to (i) the *sum* of (x) the current assets of the Company, other than cash and cash equivalents, *plus* (y) Closing Cash, *reduced by* (ii) the liabilities of the Company (excluding Company Debt, but including all Company Transaction and Bonus Expenses other than the Advisor Payments), in each case as determined in accordance with the Accounting Methodology.

“Code” means the United States Internal Revenue Code of 1986, as amended, and the rules and regulations promulgated thereunder.

“Collection and Use” (and its variants) means the collection, use interception, storage, receipt, purchase, sale, maintenance, transmission, transfer, disclosure, processing and/or use of Personal Data.

“Company Debt” means, as at any time with respect to the Company, without duplication, all Liabilities with respect to principal, accrued and unpaid interest, penalties, premiums and any other fees, expenses and breakage costs on and other payment obligations arising under any (i)



indebtedness for borrowed money (including amounts outstanding under overdraft facilities), (ii) indebtedness issued in exchange for or in substitution for borrowed money, (iii) obligations for the deferred purchase price of property, goods or services other than trade payables arising in the Ordinary Course of Business (but including any deferred purchase price Liabilities, earnouts, contingency payments, seller notes, promissory notes or similar Liabilities, in each case, related to past acquisitions by the Company and for the avoidance of doubt, whether or not contingent), (iv) obligations evidenced by any note, bond, debenture, guarantee or other debt security or similar instrument or Contract, (v) all liabilities under capitalized leases, (vi) all obligations, contingent or otherwise, in respect of amounts drawn under letters of credit and banker's acceptance or similar credit transactions, (vii) obligations under Contracts relating to interest rate protection or other hedging arrangements, to the extent payable if such Contract is terminated at Closing, and (viii) guarantees of the types of obligations described in sub clauses (i) through (vii) above. For the avoidance of doubt, the Company Note shall not constitute Company Debt for the purposes of this Agreement.

“Company Fundamental Representations” means the representations and warranties contained in Section 3.1(a), (c) and (d) (Organizational Matters), Section 3.2 (Noncontravention) (excluding clause (z) of Section 3.2(d), Section 3.3 (Capitalization), Section 3.4 (No Consents or Approvals), Section 3.9 (Taxes), and Section 3.20 (Brokers and Other Advisors).

“Company Intellectual Property Rights” means all Intellectual Property Rights owned by the Company or used by the Company in connection with the business of the Company as currently conducted, including all Intellectual Property Rights in and to Company Technology.

“Company Material Adverse Effect” means a Material Adverse Effect with respect to the Company.

“Company Noteholder” means Alchemist Accelerator Fund I, LLC.

“Company Option Plan” means the Company's 2016 Stock Plan.

“Company Optionholder” means each Person holding a Company Option.

“Company Plans” means (i) “employee benefit plans” (as defined in Section 3(3) of ERISA, as amended), (ii) individual employment, consulting, change in control, severance or other agreements or arrangements and (iii) other benefit plans, policies, agreements or arrangements, including bonus or other incentive compensation, stock purchase, equity or equity-based compensation, deferred compensation, profit sharing, change in control, severance, pension, retirement, welfare, sick leave, vacation, loans, salary continuation, health, dental, disability, flexible spending account, service award, fringe benefit, life insurance and educational assistance plan, policies, agreements or arrangements, whether written or oral, under which any Employee, Consultant or director of the Company participates and which is maintained, contributed to or participated in by the Company, or with respect to which the Company has or may have any obligation or liability, contingent or otherwise.

“Company Stockholder” means a holder of Company Stock as of the Agreement Date.

“Company Technology” means any and all Technology that is owned by the Company or used in connection with the Business of the Company as currently conducted, including Proprietary Software.

“Company Transaction and Bonus Expenses” means an amount equal to (i) the aggregate fees and expenses payable or reimbursable by the Company to third parties in connection with negotiation, entering into and consummation of this Agreement and the Transactions, including the fees and expenses of investment bankers, finders, consultants, attorneys, accountants and other advisors engaged by the Company in connection with the Transactions, *plus* (ii) all Change in Control Payments, *plus* (iii) all employer-portion payroll or employment Taxes incurred in connection with the treatment of the Company Options in connection with the Transactions (including cancellation, exercise or payment) or any Change in Control Payments *plus* (iv) the lesser of (a) one-half of the premium of the D&O Tail Policy and (b) \$4,000. For the avoidance of doubt, the following shall not constitute Company Transaction and Bonus Expenses: (x) any severance payments as a result of any terminations effected by Parent after the Closing; (y) any “double trigger” change of control obligations which have, as a second trigger, any termination effected by Parent following the Closing; and (z) any retention or similar bonus awarded by Parent or committed by Parent to be paid following the Closing.

“Consenting Holder” means a Holder that has consented to the Transactions and delivered a duly completed and executed Written Consent and Joinder Agreement.

“Consenting Shares” means all shares of Company Stock (including shares of Company Stock issuable upon conversion of the Company SAFEs and the Company Note) held by the Consenting Holders.

“Contract” means any contract, loan or credit agreement, debenture, note, guaranty, bond, mortgage, indenture, deed of trust, license, lease or other agreement that is legally binding.

“Disclosure Schedule” means a document delivered by the Company to Parent referring to the representations and warranties in ARTICLE III.

“Dissenting Shares” means shares of Company Stock held by a Holder who has properly demanded and not effectively withdrawn or lost such Holder’s appraisal, dissenters’ or similar rights for such shares under the DGCL.

“DOL” means the United States Department of Labor.

“DR Plans” means the Company’s disaster recovery and business continuity plans.

“Environmental Laws” means all Laws relating in any way to the environment, preservation or reclamation of natural resources, the presence, management or Release of, or exposure to, Hazardous Materials, or to human health and safety, including the Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. § 9601 et seq.) (“CERCLA”), the Hazardous Materials Transportation Act (49 U.S.C. § 5101 et seq.), the Resource Conservation and Recovery Act (42 U.S.C. § 6901 et seq.), the Clean Water Act (33 U.S.C. § 1251 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 Toxic Substances Control Act (15 U.S.C. § 2601 et seq.), the Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. § 136 et seq.) and the Occupational Safety and Health Act (29 U.S.C. § 651 et seq.), each of their state and local counterparts or equivalents, each of their foreign and international equivalents and any transfer of ownership notification or approval statute, as each has been amended and the regulations promulgated pursuant thereto.

“Environmental Liabilities” means, with respect to any Person, all liabilities, obligations, responsibilities, remedial actions, losses, damages, punitive damages, consequential damages, treble damages, liens, costs and expenses (including all reasonable fees, disbursements and expenses of counsel, experts and consultants and costs of investigation and feasibility studies), fines, penalties, sanctions and interest incurred as a result of any Action, claim or demand by any other Person or in response to any violation of Environmental Law, whether based in contract, tort, implied or express warranty, strict liability, criminal or civil statute or administrative regulation, to the extent based upon, related to, or arising under or pursuant to any Environmental Law, environmental Permit, order or agreement with any Governmental Authority or other Person, which relates to any environmental, health or safety condition, violation of Environmental Law or Release or threatened Release of Hazardous Materials.

“ERISA” means the Employee Retirement Income Security Act of 1974, as amended, and the rules and regulations promulgated thereunder, all as from time to time in effect, and any successor Laws thereto.

“European Economic Area” means the member countries of the European Union, Norway, Iceland and Lichtenstein.

“Expense Fund Amount” means \$350,000.

“False Claims Act” means the Federal False Claims Act, 31 U.S.C. § 3729 et seq., and all regulations promulgated thereunder.

“Final Purchase Price” means the *sum* of (i) the Base Purchase Price, *minus* (ii) the Company Debt, *minus* (iii) the amount, if any, by which the Net Working Capital Threshold exceeds the Closing Net Working Capital.

“Fully Diluted Shares of Company Stock” means the sum, without duplication, of (a) the aggregate number of shares of Company Stock that are issued and outstanding immediately prior to the Closing, plus (b) the aggregate number of shares of Company Stock issuable upon exercise or conversion, as applicable, of all Company Options, all Company SAFEs and the Company Note immediately prior to the Closing (assuming, for this purpose, (x) acceleration of all vesting periods applicable to the Company Options and shares of Company Stock, and (y) conversion of all Company SAFEs and the Company Note into Company Stock in lieu of cash or cancellation of such Company SAFEs or the Company Note).

“Fundamental Representations” means, collectively, the Company Fundamental Representations and the Parent Fundamental Representations.

“GAAP” means the generally accepted accounting principles in the United States.

“Governmental Authority” means any (i) federal, state, local, municipal, foreign or other government, (ii) governmental or quasi-governmental entity of any nature (including any governmental agency, branch, department or other entity and any court or other tribunal) or (iii) other body entitled to exercise any administrative, executive, judicial, legislative, police or regulatory authority.

“Hazardous Materials” means any material, substance or waste that is regulated, classified, or otherwise characterized under or pursuant to any Environmental Law as “hazardous”, “toxic”, a “pollutant”, a “contaminant”, “radioactive” or words of similar meaning or effect, including petroleum and its by-products, asbestos, polychlorinated biphenyls, radon, mold, urea formaldehyde insulation, chlorofluorocarbons and all other ozone-depleting substances.

“Health Care Laws” means any Laws relating to health care regulatory and reimbursement matters, including (i) the Federal Ethics in Patient Referrals Act, 42 U.S.C. § 1395nn, and all regulations promulgated thereunder, (ii) the Anti-Kickback Statute, (iii) the False Claims Act, (iv) the Occupational Safety and Health Act, and all regulations, agency guidance or similar legal requirements promulgated thereunder that apply to the Company or its Business, (v) the Federal Food, Drug and Cosmetic Act, 21 U.S.C. § 321 et seq., and all regulations, agency guidance or similar legal requirements promulgated thereunder that apply to the Company or its Business, (vi) the Public Health Service Act, 42 U.S.C. § 201 et seq., and all regulations, agency guidance or similar legal requirements promulgated thereunder that apply to the Company or its Business, (vii) the Clinical Laboratory Improvement Amendments, 42 U.S.C. § 263a, and all regulations, agency guidance or similar legal requirements promulgated thereunder that apply to the Company or its Business, (viii) applicable Laws of the United States Drug Enforcement Administration, (ix) the Medicare Act, 42 U.S.C. § 1395 et seq., and all regulations, agency guidance, or similar legal requirements promulgated thereunder that apply to the Company or its Business, (x) state self-referral, anti-kickback, fee-splitting and patient brokering Laws, (xi) Information Privacy and Security Laws, including those related to genetic testing and the privacy of genetic testing results, and (xii) state Laws governing the licensure and operation of clinical laboratories and billing for clinical laboratory services.

“HIPAA” means, collectively, the Health Insurance Portability and Accountability Act of 1996 as amended by the Health Information Technology for Economic and Clinical Health Act (“HITECH”), implementing regulations promulgated thereunder and related guidance issued from time to time.

“Holder Indemnified Persons” means the Holders and their Affiliates and each of their respective equity holders, directors, officers, employees, agents, successors and assigns.

“Holders” means, collectively, the Company Stockholders, the Company SAFE Holders, the Company Noteholder and the Company Optionholders.

“Holders’ Representative Losses” means any and all losses, liabilities, damages, claims, penalties, fines, forfeitures, actions, fees, costs and expenses of any nature (including the reasonable

fees and expenses of counsel and experts and their staffs and all expense of document location, duplication and shipment) arising out of or in connection with the Holders' Representative's execution and performance of this Agreement and any agreements ancillary hereto.

“Indemnification Hold-Back Cash Amount” means the *product* of (i) the Indemnification Hold-Back Value *multiplied by* (ii) the Indemnification Hold-Back Cash Proportion.

“Indemnification Hold-Back Cash Proportion” means the *quotient* of (i) the number of shares of Company Stock reflected in the Fully Diluted Shares of Company Stock that are either (x) Consenting Shares held by Holders that are not Accredited Investors, or (y) not Consenting Shares *divided by* (ii) the Fully Diluted Shares of Company Stock.

“Indemnification Hold-Back Share Amount” means the *sum* of (i) the Indemnification Hold-Back Value *minus* (ii) the Indemnification Hold-Back Cash Amount.

“Indemnification Hold-Back Shares” means a number of shares of Parent Common Stock equal to the *quotient* of (i) the Indemnification Hold-Back Share Amount, *divided by* (ii) the Merger Consideration Share Price.

“Indemnification Hold-Back Shares Value” means, as of any particular time, the cash value of the Indemnification Hold-Back Shares which remain subject to the Offset Right in accordance with Section 8.3, based on the average closing price for shares of Parent Common Stock on the New York Stock Exchange (or any other exchange which is then the primary exchange upon which shares of Parent Common Stock are traded) for the immediately preceding period of twenty (20) trading days, as adjusted by any stock split, division or subdivision of shares, stock dividend, reverse stock split, consolidation of shares, reclassification, recapitalization or other similar transaction with respect to shares of Parent Common Stock during such twenty (20) trading day period.

“Indemnification Hold-Back Value” means \$7,500,000.

“Indemnified Person” means a Parent Indemnified Person or a Holder Indemnified Person, as applicable.

“Indemnifying Party” means Parent or the Holders (including, where applicable, Holders' Representative on behalf of the Holders, except for provisions relating to an obligation to make or a right to receive any payments), as applicable.

“Information Privacy and Security Laws” means all applicable Laws concerning the privacy and/or security of Personal Data (including any Laws of jurisdictions where the Personal Data was collected), and all regulations promulgated thereunder, including, where applicable, HIPAA, state data privacy and breach notification Laws, state social security number protection Laws, any applicable Laws concerning requirements for website and mobile application privacy policies and practices, data or web scraping, call or electronic monitoring or recording or any outbound communications (including, outbound calling and text messaging, telemarketing, and e-mail marketing), the European Union Directive 95/46/EC, the European Union General Data Protection Regulation (GDPR), the Federal Trade Commission Act, the Gramm Leach Bliley Act, the Fair

Credit Reporting Act, the Fair and Accurate Credit Transaction Act, the CAN-SPAM Act, the Telephone Consumer Protection Act, Children's Online Privacy Protection Act, and state consumer protection Laws.

“Information Statement” shall mean an information statement prepared by the Company for the purpose of soliciting (i) written consents of the Holders in favor of the adoption of this Agreement and the approval of the Transactions (including the Mergers) and (ii) Written Consent and Joinder Agreements from Holders. Without limitation, the Information Statement shall include such information as shall be appropriate to ensure that the issuance of Parent Common Stock as contemplated by this Agreement qualifies for the exemption from registration under the Securities Act pursuant to Rule 506 of Regulation D thereunder with the assumption that all Holders receiving any consideration in the form of Parent Common Stock hereunder qualify as Accredited Investors.

“Information System” means software, hardware, computer and telecommunications equipment and other information technology and related services.

“Intellectual Property Rights” means the entire right, title and interest in and to all proprietary rights of every kind and nature however denominated, throughout the world, including: (i) patents, industrial designs, copyrights, mask work rights, trade secrets, database rights and all other proprietary rights in Technology; (ii) trademarks, trade names, service marks, service names, brands, trade dress, logos and other indicia of origin and the goodwill and activities associated therewith; (iii) domain names, rights of privacy and publicity and moral rights; (iv) any and all registrations, applications, recordings, licenses, common-law rights and contractual rights relating to any of the foregoing; and (v) all Actions and rights to sue at law or in equity for any past or future infringement or other impairment of any of the foregoing, including the right to receive all proceeds and damages therefrom and all rights to obtain renewals, continuations, divisions, or other extensions of legal protections pertaining thereto.

“Intentional Fraud” means the willful and knowing commission of fraud with the specific intent to deceive and mislead.

“IRS” means the United States Internal Revenue Service.

“Knowledge” means (i) with respect to any individual, the actual knowledge following due inquiry of the specified individual, and (ii) with respect to any entity, the actual knowledge of the executive officers of such entity following due inquiry; provided, however, the terms “Knowledge of the Company” or “to the Company's Knowledge” each mean the actual knowledge following due inquiry of Moran Snir and Guy Snir.

“Law” means any United States federal, state or local or any foreign law, statute, standard, ordinance, code, rule or regulation, resolution or promulgation, agency guidance or similar legal requirement or any Order or any Permit granted under any of the foregoing or any similar provision having the force or effect of law and includes Health Care Laws and Information Privacy and Security Laws.

“Liability” means, with respect to any Person, any liability or obligation of such Person whether known or unknown, whether asserted or not asserted, whether determined, determinable or otherwise, whether absolute or contingent, whether accrued or unaccrued, whether liquidated or unliquidated, whether due or to become due and whether or not required under GAAP to be accrued on the financial statements of such Person.

“Lien” means any charge, encumbrance, claim, community or other marital property interest, equitable ownership interest, collateral assignment, lien (statutory or otherwise), license, option, pledge, security interest, mortgage, deed of trust, attachment, right of way, easement, restriction, encroachment, servitude, right of first offer or first refusal, buy/sell agreement and any other restriction or covenant with respect to, or condition governing the use, construction, voting (in the case of any equity interest), transfer, receipt of income or exercise of any other attribute of ownership of any kind or nature whatsoever affecting or attached to any asset.

“Loss” means, with respect to any Person, any cost, damage (including incidental and consequential damages as well as any diminution in value, in each case, only to the extent such damages are reasonably foreseeable and determinable), expense, Liability, loss, injury and Tax, including interest, penalties, fees, fines, reasonable out-of-pocket legal, accounting and other professional fees and reasonable out-of-pocket expenses incurred in the investigation, collection, prosecution, determination, defense and settlement of such Losses (including, in each case, in connection with the enforcement of any claim for indemnification hereunder), that is incurred or suffered by such Person; provided, that “Losses” shall not include punitive damages (unless such punitive damages are payable in connection with a Third Party Claim).

“Material Adverse Effect” means with respect to the Company or Parent, as applicable, any fact, condition, event, occurrence, change, circumstance or effect that, individually or in the aggregate with all other facts, conditions, changes, circumstances and effects with respect to which such defined term is used in this Agreement, has, or would reasonably be expected to (i) have a material adverse effect on the business, assets, operations, results of operations, or financial condition of such Party, or (ii) materially and adversely impair such Party’s ability to, perform its obligations under the Transaction Agreements to which it is a party without material delay, or to consummate the Transactions under such Transaction Agreements; provided, however, that any determination of whether there has been a Material Adverse Effect shall not include any adverse effect, change, event, occurrence or state of facts (whether short term or long term): (s) that generally affects the industry in which the Company or Parent, as applicable, operates so long as such Party is not disproportionately affected thereby relative to other participants in such industry; (t) that results from general economic or political conditions in any country where such Party’s business is conducted so long as such Party is not disproportionately affected relative to the other companies therein; (u) arising out of or attributable to any changes in financial, banking or securities markets in general, including any disruption thereof and any decline in the price of any security or any market index or any change in prevailing interest rates; (v) arising out of or attributable to any acts of war (whether or not declared), armed hostilities or terrorism, or the escalation or worsening thereof; (w) consisting of any changes in applicable Laws, regulations, rules, orders, or other binding directives issued by any Governmental Authority, or accounting rules (including GAAP) or the enforcement, implementation or interpretation thereof; (x) consisting of any natural or man-made

disaster or acts of God; (y) consisting of any failure by such Party to meet any internal or published projections, forecasts or revenue or earnings predictions (provided that the underlying causes of such failures (subject to the other provisions of this definition) shall not be excluded); or (z) that results from the taking or announcement of any action (or inaction) specifically contemplated or required to be taken by this Agreement; including the announcement or consummation of the Transactions.

“Merger Consideration Share Price” means the average closing price for shares of Parent Common Stock on the New York Stock Exchange (or any other exchange which is then the primary exchange upon which shares of Parent Common Stock are traded) for the twenty (20) trading day period immediately preceding the Agreement Date, as adjusted by any stock split, division or subdivision of shares, stock dividend, reverse stock split, consolidation of shares, reclassification, recapitalization or other similar transaction with respect to shares of Parent Common Stock during such twenty (20) trading day period; provided, however, that if, on the Closing Date the closing price for shares of Parent Common Stock is lower than such average price as of the Agreement Date by more than 2% or higher than such average price by more than 2%, then (i) if lower, the Merger Consideration Share Price shall equal the product of (x) 102% and (y) the closing price for shares of Parent Common Stock on the New York Stock Exchange (or any other exchange which is then the primary exchange upon which shares of Parent Common Stock are traded) on the Closing Date, or (ii) if higher, the Merger Consideration Share Price shall equal the product of (x) 98% and (y) the closing price for shares of Parent Common Stock on the New York Stock Exchange (or any other exchange which is then the primary exchange upon which shares of Parent Common Stock are traded) on the Closing Date.

“Net Working Capital Threshold” means \$250,000.

“Nonqualified Deferred Compensation Plan” has the meaning given such term in Section 409A(d)(1) of the Code.

“Order” means any order, injunction (whether temporary, preliminary or permanent), judgment, decree, assessment, award or ruling enacted, promulgated, issued, entered, amended or enforced by any Governmental Authority.

“Ordinary Course of Business” means the ordinary course of business of the Company consistent with past practice.

“Parent Common Stock” means shares of Parent’s common stock, par value \$0.0001 per share, or any other shares of capital stock into which such common stock may be reclassified, converted or exchanged.

“Parent Fundamental Representations” means the representations and warranties contained in Section 4.1 (Organization) and Section 4.2 (Authority; Noncontravention).

“Parent Indemnified Person” means each of the Company (following the Closing), Parent, Merger Sub A, Merger Sub B (a/k/a the Surviving Company) and their respective Affiliates and



each of the respective directors, officers, employees, agents, successors and assigns of each of the foregoing Persons.

“Parent Material Adverse Effect” means a Material Adverse Effect with respect to Parent.

“Per Share Aggregate Upfront Consideration” means the *quotient* of (i) the *sum* of (x) the Upfront Purchase Price, *minus* (y) the Indemnification Hold-Back Value, *minus* (z) the Expense Fund Amount, *divided by* (ii) the Fully Diluted Shares of Company Stock.

“Per Share Upfront Cash Consideration” means the *quotient* of (i) the *sum* of (v) the Base Cash Amount, *minus* (w) the Aggregate Option Payment, *minus* (x) the Substitute Cash Payment Amount, *minus* (y) the Indemnification Hold-Back Cash Amount, *minus* (z) the Expense Fund Amount, *divided by* (ii) the number of Consenting Shares held by Holders that are Accredited Investors (assuming, for this purpose, (x) acceleration of all vesting periods applicable to the Company Options and shares of Company Stock, and (y) conversion of all Company SAFEs and the Company Note into Company Stock in lieu of cash or cancellation of such Company SAFEs or the Company Note).

“Per Share Upfront Stock Consideration” means the *quotient* of (i) the *sum* of (x) the Stock Consideration Shares, *minus* (y) the Indemnification Hold-Back Shares, *divided by* (ii) the number of Consenting Shares held by Holders that are Accredited Investors (assuming, for this purpose, (x) acceleration of all vesting periods applicable to the Company Options and shares of Company Stock, and (y) conversion of all Company SAFEs and the Company Note into Company Stock in lieu of cash or cancellation of such Company SAFEs or the Company Note).

“Permit” means any permit, license, franchise, certificate, accreditation approval, registration, notification or authorization from any Governmental Authority, or required by any Governmental Authority to be obtained, maintained or filed.

“Permitted Liens” means: (i) statutory liens with respect to the payment of Taxes, in all cases which are not yet due or payable or that are being contested in good faith by appropriate actions and for which appropriate reserves with respect thereto have been established on the books and records of the Company; and (ii) statutory liens of landlords, suppliers, mechanics, carriers, materialmen, warehousemen, service providers or workmen and other similar Liens imposed by Law created in the Ordinary Course of Business the existence of which could not constitute a default or breach under any of the Company’s Contracts for amounts that are not yet delinquent and are not, individually or in the aggregate significant.

“Person” means any natural person, corporation, limited liability company, partnership, association, trust or other entity, including a Governmental Authority.

“Personal Data” means, as applicable, (i) any and all information about an individual that either contains data elements that identify the individual or with respect to which there is a reasonable basis to believe the information can be used to identify the individual, (ii) any information that enables a Person to contact the individual (such as information contained in a cookie or an electronic device fingerprint) and (iii) any and all other information, the collection, use, sharing, transfer or

other processing of which is regulated by any applicable Law in relation to data protection, data privacy or personal privacy, including personal healthcare information. Personal Data includes (v) personal identifiers such as name, address, Social Security Number, date of birth, driver's license number or state identification number, Taxpayer Identification Number and passport number, (w) financial information, including credit or debit card numbers, account numbers, access codes, consumer report information and insurance policy number, (x) demographic information, (y) unique biometric data, such as fingerprint, retina or iris image, voice print or other unique physical representation and (z) individual medical or health information (including information of patients, customers, employees, workers, contractors, and third parties who have provided information to the Company, and including information relating to services provided by or to third parties). For avoidance of doubt, Personal Data does not include information that has been irreversibly anonymized so that it can no longer enable anyone, whether in combination with other information or otherwise, to identify the individual(s).

“Personal Data Obligations” means the Company's privacy policies (or applicable terms of use) as published on any Company websites or mobile applications or any other privacy policies (or applicable terms of use), Contracts, documents or promises or representations agreed to with employees, consumers or customers, or other Persons, and any applicable Laws, or applicable industry standards, regarding Collection and Use of Personal Data, including but not limited to Laws regarding the use of Personal Data for marketing communications such as the CAN SPAM Act of 2003.

“Pre-Closing Tax Period” means (i) any taxable period ending on or before the Closing Date and (ii) with respect to a Straddle Period, any portion thereof ending on and including the Closing Date.

“Pre-Closing Taxes” means all Taxes of, or imposed on, the Company with respect to any Pre-Closing Tax Period. The amount of Taxes for a Straddle Period that shall be treated as allocable to a Pre-Closing Tax Period (x) in the case of any Taxes (i) based on or measured by income, profits, receipts, capital or net worth of the Company, (ii) imposed in connection with the sale, transfer or assignment of property by the Company or (iii) required to be withheld by the Company, shall be determined based on an interim closing of the books as of the close of business on the Closing Date, and (y) in the case of any other Taxes (such as *ad valorem* Taxes), shall be equal to the product of the amount of such Taxes for the entire Straddle Period multiplied by a fraction, the numerator of which is the number of calendar days in the Straddle Period before and including the Closing Date and the denominator of which is the total number of calendar days in the entire Straddle Period.

“Pro Rata Portion” means, with respect to any Consenting Holder, the portion of the Final Purchase Price to which such Consenting Holder is allocated pursuant to the terms of this Agreement relative to the Final Purchase Price allocated to all Consenting Holders (expressed as a percentage, rounded to four decimal places, and as set forth in the Allocation Schedule).

“Products and Services” means any product or service that the Company currently offers or sells.

“Proprietary Software” means any Software that is owned by the Company and is related to the Company’s Business as conducted by the Company.

“Public Software” means any software that is (i) distributed as free software or as open source software (e.g., Linux), (ii) subject to any licensing or distribution model that includes as a term thereof any requirement for distribution of source code to licensees or third parties, patent license requirements on distribution, restrictions on future patent licensing terms, or other abridgement or restriction of the exercise or enforcement of any Company Intellectual Property Rights through any means, (iii) licensed or distributed under any Public Software License or under less restrictive free or open source licensing and distribution models such as those obtained under the BSD, MIT, Boost Software License and the Beer-Ware Public Software Licenses or any similar licenses, (iv) a public domain dedication or (v) derived in any manner (in whole or in part) from, links to, relies on, is distributed with, incorporates or contains any software described in (i) through (iv) above.

“Public Software License” means any of the following licenses or distribution models, or licenses or distribution models similar to any of the following: (i) GNU’s General Public License (GPL) or Lesser/Library GPL (LGPL); (ii) the Artistic License (e.g., PERL); (iii) the Mozilla Public License; (iv) the Netscape Public License; (v) the Sun Community Source License (SCSL); (vi) the Sun Industry Standards License (SISL); (vii) the Apache License; and (viii) any licenses that are defined as OSI (Open Source Initiative) licenses as listed on the Opensource.org website.

“Reference Date” means July 8, 2016.

“Related Party” means (i) any current or former director (or nominee), or officer of the Company, (ii) any ten percent (10%) or greater Company Stockholder on a fully-diluted basis and (iii) any first-degree relative, spouse, officer, director or Affiliate of any of the foregoing Persons.

“Release” means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, disposing of or migrating into or through the environment or any natural or man-made structure.

“Representatives” means, with respect to any Person, the officers, employees, investment bankers, financial advisors, attorneys, accountants, agents and other representatives of such Person.

“SEC” means the United States Securities and Exchange Commission.

“Securities Act” means the Securities Act of 1933, as amended.

“Software” means computer software programs and software systems, including all databases, compilations, tool sets, compilers, higher level or “proprietary” languages, related documentation and materials (including all Source Code Materials), whether in source code, object code or human readable form, and all software programs and software systems that are classified as work-in-progress on the Closing Date.

“Source Code Materials” as it pertains to source code of any Software means: (i) the software, tools and materials utilized for the operation, development and maintenance of the Software; (ii) documentation describing the names, vendors and version numbers of (x) the development tools used to maintain or develop the Software and (y) any third-party software or other applications that form part of the source code version of the Software and are required in order to compile, assemble, translate, bind and load the Software into executable releases; (iii) all programmers’ notes, bug lists and technical information, systems and user manuals and documentation for the Software, including all job control language statements, descriptions of data structures, flow charts, technical specifications, schematics, statements or principles of operations, architecture standards and annotations describing the operation of the Software; and (iv) all test data, test cases and test automation scripts used for the testing and validating the functioning of the Software.

“Stock Consideration Shares” means a number of shares of Parent Common Stock equal to the *quotient* of (i) the Stock Consideration Value, *divided by* (ii) the Merger Consideration Share Price.

“Stock Consideration Value” means the *sum* of (i) the Upfront Purchase Price, *minus* (ii) the Base Cash Amount.

“Subsidiary” means, with respect to a Party, any corporation, limited liability company, partnership, association, trust or other entity the accounts of which would be consolidated with those of such Party in such entity’s consolidated financial statements if such financial statements were prepared in accordance with GAAP, as well as any other corporation, limited liability company, partnership, association, trust or other entity of which securities or other ownership interests representing more than 50% of the equity or more than 50% of the ordinary voting power (or, in the case of a partnership, more than 50% of the general partnership interests) are, as of such date, owned by such Party or one or more Subsidiaries of such Party.

“Substitute Cash Payment Amount” means the aggregate amount payable, if any, to the Holders pursuant to Sections 2.6(c)(iii)(A) and 2.6(c)(iv)(A).

“Tax” or “Taxes” means (i) any or all federal, state, local or foreign taxes or other assessments in the nature of taxes imposed by a Taxing Authority, including all net income, gross receipts, capital, sales, use, ad valorem, value added, transfer, franchise, profits, inventory, capital stock, withholding, payroll, employment, social security, unemployment, excise, severance, stamp, occupation, property and estimated taxes, and (ii) any or all interest, penalties or additions to tax imposed by any Taxing Authority in connection with any item described in clause (i).

“Tax Returns” means, with respect to Taxes, any return, report, claim for refund, estimate, information return or statement, declaration of estimated Tax or other similar document filed or required to be filed with any Taxing Authority with respect to Taxes, including any schedule or attachment thereto and including any amendment thereof.

“Tax Sharing Agreement” means any agreement relating to the sharing, allocation or indemnification of Taxes or amounts in lieu of Taxes, or any similar Contract or arrangement, other

than any Contract or arrangement entered into in the ordinary course of business the purpose of which is not primarily related to Taxes.

“Taxing Authority” means any Governmental Authority responsible for the administration, assessment and collection of any Taxes.

“Technology” means all inventions, works, discoveries, innovations, know-how, information (including ideas, research and development, formulas, algorithms, compositions, processes and techniques, data, designs, drawings, specifications, customer and supplier lists, pricing and cost information, business and marketing plans and proposals, graphics, illustrations, artwork, documentation and manuals), databases, computer software, firmware, computer hardware, integrated circuits and integrated circuit masks, electronic, electrical and mechanical equipment and all other forms of technology, including improvements, modifications, works in process, derivatives, or changes, whether tangible or intangible, embodied in any form, and all documents and other materials recording any of the foregoing.

“Third Party Claim” refers to any Action that is instituted, or any claim that is asserted, by any Person not party to this Agreement in respect of an indemnifiable matter under this Agreement.

“Transaction Agreements” means this Agreement and the Written Consent and Joinder Agreements.

“Transactions” means any transaction or arrangement contemplated by this Agreement, including (i) the Mergers and the other transactions and arrangements described in the recitals to this Agreement, (ii) the execution, delivery and performance of the Transaction Agreements other than this Agreement and (iii) the payment of fees and expenses relating to such transactions by the Company and the Holders.

“Upfront Purchase Price” means the *sum* of (i) the Base Purchase Price, *minus* (ii) the estimated Company Debt, *minus* (iii) the amount, if any, by which the Net Working Capital Threshold exceeds the estimated Closing Net Working Capital.

#### **Terms Defined Elsewhere in this Agreement.**

For purposes of this Agreement, the following terms have meanings set forth at the section of this Agreement indicated opposite such term:

<b><u>Term</u></b>	<b><u>Section</u></b>
“ <u>1934 Act</u> ”	<u>Section 4.4(a)</u>
“ <u>Agreement</u> ”	<u>Preamble</u>
“ <u>Agreement Date</u> ”	<u>Preamble</u>
“ <u>Allocation Schedule</u> ”	<u>Section 2.10</u>
“ <u>Assets</u> ”	<u>Section 3.13</u>
“ <u>Balance Sheet Date</u> ”	<u>Section 3.5(a)(i)</u>

<u>Term</u>	<u>Section</u>
“Basket”	<u>Section 8.2(b)(i)(A)</u>
“Certificate of Forward Merger”	<u>Section 2.1</u>
“Certificates of Reverse Merger”	<u>Section 2.1</u>
“Certificates of Merger”	<u>Section 2.1</u>
“Closing”	<u>Section 2.2</u>
“Closing Date”	<u>Section 2.2</u>
“Company”	<u>Preamble</u>
“Company Charter Documents”	<u>Section 3.1(d)</u>
“Company Indemnified Persons”	<u>Section 5.16(a)</u>
“Company Note”	<u>Recitals</u>
“Company SAFE”	<u>Recitals</u>
“Company SAFE Holder”	<u>Recitals</u>
“Company Stock”	<u>Recitals</u>
“Company Option”	<u>Recitals</u>
“Company Registrations”	<u>Section 3.15(c)</u>
“Competing Transaction”	<u>Section 5.11</u>
“Confidential Information”	<u>Section 5.6</u>
“Conflict”	<u>Section 3.2(d)</u>
“Consultant”	<u>Section 3.1(b)</u>
“Continuing Employees”	<u>Section 5.9</u>
“Current Consultant”	<u>Section 3.1(b)</u>
“Current Employee”	<u>Section 3.1(b)</u>
“D&O Tail Policy”	<u>Section 5.16(b)</u>
“DGCL”	<u>Recitals</u>
“DLLCA”	<u>Recitals</u>
“Effective Time”	<u>Section 2.1</u>
“Employee”	<u>Section 3.1(b)</u>
“Employment Documents”	<u>Section 5.99</u>
“ERISA Affiliate”	<u>Section 3.10(c)</u>
“Estimated Balance Sheet”	<u>Section 2.10(e)</u>
“Exchange Agent”	<u>Section 2.14(a)</u>
“Exchange Agreement”	<u>Section 2.14(a)</u>
“Expense Fund”	<u>Section 8.5(f)</u>
“Final Calculation”	<u>Section 2.18(a)</u>
“Financial Statements”	<u>Section 3.5(a)(i)</u>
“First Indemnification Hold-Back Payment Date”	<u>Section 2.19</u>
“Forward Merger”	<u>Recitals</u>
“General Survival Date”	<u>Section 8.1</u>
“Holders’ Representative”	<u>Section 8.5(a)</u>
“Inbound IP Contracts”	<u>Section 3.15(d)</u>

<u>Term</u>	<u>Section</u>
“ <u>Initial Resolution Period</u> ”	<u>Section 2.18(a)</u>
“ <u>Interim Balance Sheet</u> ”	<u>Section 3.5(a)(i)</u>
“ <u>Interim Balance Sheet Date</u> ”	<u>Section 3.5(a)(i)</u>
“ <u>IP Contracts</u> ”	<u>Section 3.15(d)</u>
“ <u>Letter of Transmittal</u> ”	<u>Section 2.14(b)</u>
“ <u>Material Contract</u> ”	<u>Section 3.12(c)</u>
“ <u>Mergers</u> ”	<u>Recitals</u>
“ <u>Merger Sub A</u> ”	<u>Preamble</u>
“ <u>Merger Sub B</u> ”	<u>Preamble</u>
“ <u>Multiemployer Plan</u> ”	<u>Section 3.10(c)</u>
“ <u>Non-Offset Notice</u> ”	<u>Section 8.4(b)</u>
“ <u>Note Conversion</u> ”	<u>Section 2.6(c)(i)</u>
“ <u>Objection Notice</u> ”	<u>Section 2.18(a)</u>
“ <u>Objection Period</u> ”	<u>Section 2.18(a)</u>
“ <u>Offset Certificate</u> ”	<u>Section 8.3(b)</u>
“ <u>Offset Right</u> ”	<u>Section 8.3(a)</u>
“ <u>Outbound IP Contracts</u> ”	<u>Section 3.15(d)</u>
“ <u>Outside Date</u> ”	<u>Section 7.1(b)</u>
“ <u>Parent</u> ”	<u>Preamble</u>
“ <u>Parent Plan</u> ”	<u>Section 1.1(a)</u>
“ <u>Parent’s SEC Documents</u> ”	<u>Section 4.4(a)</u>
“ <u>Parties</u> ”	<u>Preamble</u>
“ <u>Payoff Amount</u> ”	<u>Section 2.11(a)</u>
“ <u>Post-Closing Adjustment</u> ”	<u>Section 2.18(c)(i)</u>
“ <u>Registration Rights Agreement</u> ”	<u>Section 5.13</u>
“ <u>Requisite Stockholder Approval</u> ”	<u>Section 3.2(b)</u>
“ <u>Reverse Merger</u> ”	<u>Recitals</u>
“ <u>Reviewing Party</u> ”	<u>Section 2.18(b)</u>
“ <u>SAFE Conversion</u> ”	<u>Section 2.6(c)(i)</u>
“ <u>Second Indemnification Hold-Back Payment Date</u> ”	<u>Section 2.19</u>
“ <u>Security Program</u> ”	<u>Section 3.15(g)(vii)</u>
“ <u>Settlement</u> ”	<u>Section 8.4(a)(iv)</u>
“ <u>Shrink Wrap Licenses</u> ”	<u>Section 3.15(a)(i)</u>
“ <u>Stated Damages</u> ”	<u>Section 8.3(b)</u>
“ <u>Straddle Periods</u> ”	<u>Section 5.8(b)</u>
“ <u>Survival Date</u> ”	<u>Section 8.1</u>
“ <u>Surviving Company</u> ”	<u>Section 2.1</u>
“ <u>Tax Claim</u> ”	<u>Section 5.8(c)(i)</u>
“ <u>Third Party Indemnification Claim Notice</u> ”	<u>Section 8.4(a)(i)</u>
“ <u>Third Party Software</u> ”	<u>Section 3.15(d)</u>

<u>Term</u>	<u>Section</u>
“Title IV Plan”	Section 3.10(c)
“Top Supplier”	Section 3.18
“Transfer Taxes”	Section 5.8(h)
“Written Consent and Joinder Agreement”	Recitals

## ARTICLE II

### THE CONTEMPLATED TRANSACTIONS

2.1 The Mergers. Upon the terms and subject to the conditions set forth in this Agreement and in accordance with the DGCL, at the Closing, the Parties shall cause the Reverse Merger to be consummated by filing with the Secretary of State of the State of Delaware a certificate of merger in the form attached hereto as Exhibit B (the “Certificate of Reverse Merger”), executed in accordance with the relevant provisions of the DGCL, and shall make all other filings or recordings required under the DGCL in order to consummate the Merger. The Reverse Merger shall become effective at the time the Certificate of Reverse Merger is filed with the Secretary of State of the State of Delaware (the “Effective Time”). At the Effective Time, Merger Sub A shall be merged with and into the Company, and the separate corporate existence of Merger Sub A shall thereupon cease, and the Company shall continue as the surviving corporation and a wholly owned Subsidiary of Parent. Promptly after the Closing, and in all cases on the Closing Date, Parent shall cause the Forward Merger to be consummated by filing with the Secretary of State of the State of Delaware a certificate of merger in the form attached hereto as Exhibit C (the “Certificate of Forward Merger” and, together with the Certificate of Reverse Merger, the “Certificates of Merger”), executed in accordance with the relevant provisions of the DLLCA, and shall make all other filings or recordings required under the DLLCA in order to consummate the Forward Merger. The Forward Merger shall become effective at the time the Certificate of Forward Merger is filed with the Secretary of State of the State of Delaware. At the effective time of the Forward Merger, Parent shall cause the Company to merge with and into Merger Sub B in accordance with the DLLCA, whereupon the separate existence of the Company shall cease, and Merger Sub B will be the Surviving Company. The surviving company after the Forward Merger is sometimes referred to hereinafter as the “Surviving Company.”

2.2 Closing. The closing of the Transactions (the “Closing”) shall take place at 10:00 a.m. (San Francisco time) on the second Business Day following the satisfaction or waiver of the conditions set forth in ARTICLE VI (other than those conditions that by their nature are to be satisfied at the Closing, but subject to the satisfaction or waiver of those conditions at such time) at the offices of Pillsbury Winthrop Shaw Pittman LLP, 12255 El Camino Real, Suite 300, San Diego, California 92130, unless another time, date or place is agreed to in writing by the Parties (the “Closing Date”).

2.3 Effects of the Mergers. The Mergers shall have the effects set forth in this Agreement, the DGCL and the DLLCA. Without limiting the generality of the foregoing and subject thereto, as a result of the Mergers, (i) all the rights, privileges and powers of the Company, Merger Sub A and Merger Sub B shall vest in the Surviving Company, (ii) all of the property, real and personal,



including causes of action and every other asset of the Company, Merger Sub A and Merger Sub B, shall vest in the Surviving Company without further act or deed and (iii) all debts, liabilities and duties of the Company, Merger Sub A and Merger Sub B shall become the debts, liabilities and duties of the Surviving Company.

#### 2.4 Organization Documents of the Surviving Company.

(a) Certificate of Incorporation and Operating Agreement. At the Effective Time, the certificate of incorporation of the Company shall be amended and restated so as to be identical to the certificate of incorporation of Merger Sub A as in effect immediately prior to the Effective Time, except that the name of the Surviving Company in the Reverse Merger shall be the name of the Company as of immediately prior to the Effective Time. At the effective time of the Forward Merger, the limited liability company operating agreement of the Merger Sub B shall be (i) amended and restated so as to be substantively identical to the certificate of incorporation of Merger Sub A as in effect immediately prior to the effective time of the Forward Merger, except that the name of the Surviving Company shall be the name of Merger Sub A as of immediately prior to the effective time of the Forward Merger (i.e., the name of the Company as of immediately prior to the Effective Time), and (ii) the limited liability company operating agreement of the Surviving Company until thereafter amended as provided therein or by applicable Law.

(b) Bylaws. At the Effective Time, the bylaws of the Company shall be amended and restated so as to be identical to the bylaws of Merger Sub A as in effect immediately prior to the Effective Time.

#### 2.5 Management of the Surviving Company.

(a) Board of Directors. Unless otherwise determined by Parent prior to the Effective Time, the Parties shall take all requisite action so that the directors of Merger Sub B immediately prior to the Effective Time shall be the directors of the Surviving Company immediately following the effectiveness of both Mergers, until their respective successors are duly elected and qualified or their earlier death, resignation or removal in accordance with the Charter Documents of the Surviving Company.

(b) Officers. Unless otherwise determined by Parent prior to the Effective Time, the Parties shall take all requisite action so that the officers of Merger Sub B immediately prior to the Effective Time shall be the officers of the Surviving Company until their respective successors are duly appointed and qualified or their earlier death, resignation or removal in accordance with the Charter Documents of the Surviving Company.

2.6 Effect of the Reverse Merger on Capital Stock. At the Effective Time, by virtue of the Reverse Merger and without any action to be taken on the part of the holder of any shares of the Company Stock or any shares of capital stock of Merger Sub A, or on the part of the Company, Parent, Merger Sub A or any other Person, the following shall occur:

(a) Capital Stock of Merger Sub A. Each share of capital stock of Merger Sub A issued and outstanding immediately prior to the Effective Time shall be converted into and become

one validly issued, fully paid and non-assessable share of common stock, par value \$0.0001 per share, of the Company and collectively shall constitute the only outstanding shares of capital stock of the Company and each stock certificate of Merger Sub A evidencing ownership of any such shares shall evidence ownership of such shares of common stock of the Company.

(b) Cancellation of Securities Held by the Company. Any shares of Company Stock that are owned by the Company immediately prior to the Effective Time shall be automatically canceled and shall cease to exist and no consideration shall be delivered in exchange therefor.

(c) Conversion of Company Stock.

(i) SAFE AND Note Conversions. For each Company SAFE outstanding prior to the Effective Time that is converted into shares of Company Stock in accordance with the applicable Company SAFE, such conversion is referred to herein as a “SAFE Conversion”. If the Company Note is converted into shares of Company Stock in accordance with its terms, such conversion is referred to herein as the “Note Conversion”.

(ii) Accredited Consenting Holders. Each share of Company Stock that is (x) issued and outstanding (including as a result of the SAFE Conversion and the Note Conversion) immediately prior to the Effective Time (other than shares to be canceled in accordance with Section 2.6(b)) and (y) held by a Consenting Holder that qualifies as an Accredited Investor, shall, subject to the terms and conditions of this Agreement (including Section 2.6(c)(iv) below), be converted into the right to receive (without interest) the following consideration, payable as set forth herein:

(A) within three (3) Business Days after the Closing Date, a certificate or book entry reflecting an amount of shares of Parent Common Stock equal to the Per Share Upfront Stock Consideration (which shall reflect any adjustments required by the definition of Merger Consideration Share Price);

(B) on the Closing Date, an amount of cash equal to the Per Share Upfront Cash Consideration;

(C) an amount of cash equal to the *quotient* of (x) the amount of any Post-Closing Adjustment (to the extent payable in accordance with Section 2.18(c)(iii)), divided by (y) the Fully Diluted Shares of Company Stock;

(D) a certificate or book entry reflecting an amount of shares of Parent Common Stock equal to the *quotient* of (x) the Indemnification Hold-Back Shares, to the extent released to the Holders as provided herein, *divided by* (y) the Consenting Shares held by Holders that are Accredited Investors (assuming, for this purpose, (1) acceleration of all vesting periods applicable to the Company Options and shares of Company Stock, and (2) conversion of all Company SAFEs and the Company Note into Company Stock in lieu of cash or cancellation of such Company SAFEs or the Company Note); and

(E) an amount of cash equal to up to the *quotient* of (x) the Expense Fund Amount, to the extent released to the Holders as provided herein, *divided by* (y) the Fully Diluted Shares of Company Stock.

(iii) Non-Accredited Consenting Holders. Each share of Company Stock that is (x) issued and outstanding (including as a result of the SAFE Conversion and the Note Conversion) immediately prior to the Effective Time (other than shares to be canceled in accordance with Section 2.6(b)) and (y) held by a Consenting Holder that does not qualify as an Accredited Investor, shall, subject to the terms and conditions of this Agreement (including Section 2.6(c)(iv) below), be converted into the right to receive (without interest) the following consideration, payable as set forth herein:

(A) on the Closing Date, an amount of cash equal to the Per Share Aggregate Upfront Consideration;

(B) an amount of cash equal to the *quotient* of (x) the amount of any Post-Closing Adjustment (to the extent payable in accordance with Section 2.18(c)(iii)), divided by (y) the Fully Diluted Shares of Company Stock;

(C) an amount of cash equal to up to the *quotient* of (x) the Indemnification Hold-Back Cash Amount, to the extent released to the Holders as provided herein, *divided by* (y) the sum of (i) the Fully Diluted Shares of Company Stock *minus* (ii) the Consenting Shares held by Holders that are Accredited Investors (assuming, for this purpose, (1) acceleration of all vesting periods applicable to the Company Options and shares of Company Stock, and (2) conversion of all Company SAFEs and the Company Note into Company Stock in lieu of cash or cancellation of such Company SAFEs or the Company Note); and

(D) an amount of cash equal to up to the *quotient* of (x) the Expense Fund Amount, to the extent released to the Holders as provided herein, *divided by* (y) the Fully Diluted Shares of Company Stock.

(i) Other Holders. Notwithstanding the provisions of Sections 2.6(c)(ii) and 2.6(c)(iii), to the extent that any share of Company Stock issued and outstanding (including as a result of the SAFE Conversion and the Note Conversion) immediately prior to the Effective Time (other than shares to be canceled in accordance with Section 2.6(b)) is held by a Holder that is not a Consenting Holder, then such share shall, subject to the terms and conditions of this Agreement, be converted into the right to receive (without interest) the following consideration, payable as set forth herein:

(A) on the Closing Date, an amount of cash equal to the Per Share Aggregate Upfront Consideration;

(B) an amount of cash equal to the *quotient* of (x) the amount of any Post-Closing Adjustment (to the extent payable in accordance with Section 2.18(c)(iii)), divided by (y) the Fully Diluted Shares of Company Stock;

(C) an amount of cash equal to up to the *quotient* of (x) the Indemnification Hold-Back Cash Amount, to the extent released to the Holders as provided herein, *divided by* (y) the sum of (i) the Fully Diluted Shares of Company Stock *minus* (ii) the Consenting Shares held by Holders that are Accredited Investors (assuming, for this purpose, (1) acceleration of all vesting periods applicable to the Company Options and shares of Company Stock, and (2) conversion of all Company SAFEs and the Company Note into Company Stock in lieu of cash or cancellation of such Company SAFEs or the Company Note); and

(D) an amount of cash equal to up to the *quotient* of (x) the Expense Fund Amount, to the extent released to the Holders as provided herein, *divided by* (y) the Fully Diluted Shares of Company Stock.

2.7 Options. It is acknowledged and agreed by all of the Parties that:

(a) At the Closing, each Company Option that is unexpired, unexercised and outstanding immediately prior to the Closing shall (i) become fully vested with respect to all shares exercisable thereunder, and (ii) be cancelled in exchange for the right to receive (without interest) the following consideration for each share of Company Stock issuable upon the exercise of such Company Option as of immediately prior to the Closing, payable as set forth herein:

(A) an amount of cash equal to the *sum* of (x) the Per Share Aggregate Upfront Consideration, *minus* (y) the exercise price per share of such Company Option;

(B) an amount of cash equal to the *quotient* of (x) the amount of any Post-Closing Adjustment (to the extent payable in accordance with Section 2.18(c)(iii)), divided by (y) the Fully Diluted Shares of Company Stock;

(C) an amount of cash equal to up to the *quotient* of (x) the Indemnification Hold-Back Cash Amount, to the extent released to the Holders as provided herein, *divided by* (y) the sum of (i) the Fully Diluted Shares of Company Stock *minus* (ii) the Consenting Shares held by Holders that are Accredited Investors (assuming, for this purpose, (1) acceleration of all vesting periods applicable to the Company Options and shares of Company Stock, and (2) conversion of all Company SAFEs and the Company Note into Company Stock in lieu of cash or cancellation of such Company SAFEs or the Company Note); and

(D) an amount of cash equal to up to the *quotient* of (x) the Expense Fund Amount, to the extent released to the Holders as provided herein, *divided by* (y) the Fully Diluted Shares of Company Stock.

All amounts paid to Optionholders shall be paid in accordance with Treasury Regulation Section 1.409A-3(i)(5)(iv)(A).

2.8 Rights Cease to Exist. As of the Effective Time, all shares of Company Stock, and all options, warrants and other securities convertible, exercisable or exchangeable for, or otherwise granting the right to acquire, Company Stock, shall no longer be outstanding, shall automatically

be canceled and shall cease to exist and each holder of any shares of Company Stock shall cease to have any rights with respect thereto, except the rights set forth in this ARTICLE II.

2.9 No Fractional Shares; Offset Right. Notwithstanding any provision herein to the contrary (i) no fractional shares of Parent Common Stock shall be issued pursuant to this ARTICLE II (with the intended effect that any shares of Parent Common Stock issuable to a single Consenting Holder on a particular date shall be aggregated and then rounded up to the nearest whole number); (ii) in no event shall the total number of shares of Parent Common Stock issued hereunder exceed 19.9% of the total number of shares of Parent Common Stock outstanding immediately prior to the Closing (not including any shares of Parent Common Stock that are owned by Parent and without assuming the conversion or exercise of any options, warrants or other convertible securities) if Parent has not first obtained the required stockholder approval of the issuance of such number of shares of Parent Common Stock pursuant to applicable stock exchange listing rules (with Parent agreeing to exercise good faith efforts to obtain such required stockholder approval if the 19.9% cap will have any effect with respect to any issuance of Parent Common Stock pursuant to this Agreement); (iii) if, when cash and Indemnification Hold-Back Shares would otherwise be distributed or payable pursuant to Section 2.6(c)(ii)(D), Section 2.6(c)(iii)(C), Section 2.6(c)(iv)(C) and Section 2.7(a)(C), as applicable, there shall exist a good faith claim by Parent to exercise the Offset Right, all or a portion of such cash and Indemnification Hold-Back Shares (with such shares valued at the Indemnification Hold-Back Shares Value) as determined by Parent (in its reasonable discretion, but subject to the limitations set forth in ARTICLE VIII) to represent the Losses at issue (including, if applicable, as to any specific Holders) shall be withheld from payment until such time as the claim has been perfected, in which case the Offset Right shall apply (subject to the limitations set forth in ARTICLE VIII) against such portion of the shares and cash at issue and the balance of any withheld portion (if applicable) shall be distributed to the Holders (or, as applicable, to the affected Holders) as contemplated by this Agreement; and (iv) no Holder may assign or transfer any right to receive shares of Parent Common Stock or cash pursuant to this Agreement without the prior written consent of Parent (which may be withheld in Parent's sole discretion).

2.10 Delivery of Calculations. Not less than two (2) Business Days prior to the Closing Date, the Company shall prepare and deliver to Parent the following for Parent's review and approval:

(a) the Company's calculation of the Upfront Purchase Price, setting forth, in reasonable detail, an estimation of each component thereof;

(b) the Company's calculations (setting forth the individual components) of (i) the Aggregate Option Payment, (ii) the Substitute Cash Payment Amount, (iii) the Stock Consideration Value, (iv) the Stock Consideration Shares, (v) the Per Share Upfront Cash Consideration, (vi) the Per Share Upfront Stock Consideration, and (vii) the Per Share Aggregate Upfront Consideration;

(c) the Company's calculations of (i) the Fully Diluted Shares of Company Stock, (ii) the aggregate number of Consenting Shares held by Holders that are Accredited Investors,

and (iii) the aggregate number of Consenting Shares held by Holders that are not Accredited Investors;

(d) a schedule of all Company Options, with exercise price information for each Company Option;

(e) the Company's estimated balance sheet as of immediately prior to the Closing (the "Estimated Balance Sheet"), with separate schedules reflecting (i) the estimated Closing Cash, (ii) the estimated Company Debt, (iii) the estimated Company Transaction and Bonus Expenses and (iv) the estimated Closing Net Working Capital as well as the delta between the estimated Closing Net Working Capital and the Net Working Capital Threshold;

(f) the name, address (or email address) and, if known, tax identification number of each Holder and:

(i) for the Consenting Holders, the amount of Parent Common Stock to be issued to each Consenting Holder, if any, pursuant to Section 2.6(c)(ii)(A), the amount of cash to be paid to each Consenting Holder pursuant to Section 2.6(c)(ii)(B) or Section 2.6(c)(iii)(A), as applicable, as well as the potential cash payable and potential Parent Company Stock issuable, if any, to each such Consenting Holder pursuant to Sections 2.6(c)(ii)(C) through 2.6(c)(iii)(E) or Sections 2.6(c)(iii)(B) through 2.6(c)(iii)(D), as applicable;

(ii) for any Holders that are not Consenting Holders, the amount of cash to be paid to each Holder pursuant to Section 2.6(c)(iv)(A), as well as the potential cash payable each such Holder pursuant to Sections 2.6(c)(iv)(B) through 2.6(c)(iv)(D), as applicable;

(iii) in the instance of Company Optionholders, the amount of cash to be paid to each Company Optionholder pursuant to Section 2.7(a)(A) as well as the potential cash payable to each Company Optionholder pursuant to Sections 2.7(a)(B) through 2.7(a)(C); and

(g) the Company's determination of whether Taxes are required to be withheld from any payments to each Holder under this Agreement (assuming submission of a Form W-9 or Form W-8, as applicable); and

(h) a certificate of a duly authorized officer of the Company certifying the foregoing on behalf of the Company.

The calculations listed in the foregoing Section 2.10(a) through 2.10(g) shall be set forth on a spreadsheet referred to herein as the "Allocation Schedule" and with respect to any calculation of shares of Parent Common Stock, which calculations shall be before giving effect to any adjustment to the Merger Consideration Share Price. The Parties agree that Parent, Merger Sub A, Merger Sub B and the Surviving Company will have the right to rely on the Allocation Schedule as setting forth a true, complete and accurate listing of all amounts due to be paid by Parent, Merger Sub A, Merger Sub B and the Company to the Holders in exchange for Company Stock, subject to any adjustments required by the definition of Merger Consideration Share Price. Parent, Merger Sub A, Merger Sub B and the Surviving Company will not have any liability with respect to the allocation of any shares

of Parent Common Stock or cash made to the Holders in accordance with the Allocation Schedule. Notwithstanding anything in this Agreement to the contrary, the Estimated Balance Sheet and the Company's estimation of the Net Working Capital shall be consistent with the Accounting Methodology and shall reflect all vacation, sick leave, severance and/or other remuneration required by Law, Contract or policy of the Company to be paid to Employees for periods on or prior to the Closing Date.

2.11 Payments At Closing. At the Closing, Parent shall make, or cause to be made, the following payments, by wire transfer of immediately available funds:

(a) to each holder of Company Debt, the aggregate amount of Company Debt owed to such holder as of the Closing pursuant to a payoff letter from such holder (i) indicating the amount required to discharge such Company Debt in full (the "Payoff Amount") and (ii) agreeing to release applicable Liens upon receipt of the applicable Payoff Amount;

(b) to the payees thereof, the Company Transaction and Bonus Expenses, including the Advisor Payments, in each case as directed in writing by the Company prior to the Closing pursuant to invoices or other evidence reasonably satisfactory to Parent, except that Parent shall cause Change of Control Payments to Employees to be paid through the Surviving Company's payroll system; and

(c) to the Exchange Agent, the aggregate cash for distribution to the Holders as of immediately following the Closing pursuant to Section 2.6(c)(ii)(B), Section 2.6(c)(iii)(A) and Section 2.6(c)(iv)(A) and in accordance with the Allocation Schedule.

Promptly following the Closing, Parent will pay directly, or through the Company's payroll service as applicable (i.e., to Employees), the cash to be distributed to the Company Optionholders as of immediately following the Closing pursuant to Section 2.7(a)(A) and in accordance with the Allocation Schedule.

2.12 Issuances of Shares Following Closing. Within three (3) Business Days after the Closing Date, Parent shall deliver certificates or book entries reflecting the shares of Parent Common Stock to be allocated among the Consenting Holders that are Accredited Investors pursuant to Section 2.6(c)(ii)(A) and in accordance with the Allocation Schedule and adjusted if required by the definition of Merger Consideration Share Price; provided, however, that with respect to any shares of Company Stock for which a properly completed Letter of Transmittal has not been received by the Exchange Agent, Parent shall be entitled to withhold the certificates or book entries reflecting the shares of Parent Common Stock issuable with respect to such shares of Company Stock and to issue such shares of Parent Common Stock promptly following such receipt by the Exchange Agent.

2.13 Non-Conversion.

(a) Dissenting Shares. Notwithstanding anything in this Agreement to the contrary, any Dissenting Shares shall not be converted into or represent a right to receive the applicable consideration for Company Stock set forth in Section 2.6, but instead the applicable Company Stockholder shall only be entitled to such rights as are provided by the DGCL. In the

event that a Company Stockholder properly perfects such Company Stockholder's appraisal, dissenters' or similar rights by demanding and not effectively withdrawing or losing such Company Stockholder's appraisal, dissenters' or similar rights for any shares of Company Stock, the Exchange Agent shall deliver to Parent such Company Stockholder's portion of any cash otherwise allocable to such Dissenting Shares at the time such rights are perfected.

(b) Withdrawal or Loss of Rights. Notwithstanding the provisions of Section 2.13(a), if any Company Stockholder effectively withdraws or loses (through failure to perfect or otherwise) such Company Stockholder's appraisal or dissenters' rights with respect to any Dissenting Shares under the DGCL, then, within ten (10) Business Days of the later of the Effective Time and the occurrence of such event, (i) such Company Stockholder's shares shall automatically convert into and represent only the right to receive the consideration for Company Stock, as applicable, set forth in and subject to the provisions of this Agreement, upon delivery of a duly completed and validly executed Letter of Transmittal and (ii) Parent (to the extent the following amount has been previously delivered by the Exchange Agent to Parent pursuant to Section 2.13(a) and not returned to the Exchange Agent) or the Exchange Agent shall deliver to such Company Stockholder such Company Stockholder's portion of the cash attributable to such shares.

(c) Demands for Appraisal. The Company shall give Parent (i) prompt notice of any written demand for appraisal received by the Company pursuant to the applicable provisions of the DGCL and (ii) the opportunity to participate in all negotiations and proceedings with respect to such demands. The Company shall not, except with the prior written consent of Parent (not to be unreasonably withheld, conditioned or delayed), make any payment with respect to any such demands or offer to settle or settle any such demands. Any communication to be made by the Company to any Company Stockholder with respect to such demands must be submitted and consented to in writing by Parent prior to delivery to any such Company Stockholder.

#### 2.14 Exchange Agent; Submission of Letters of Transmittal.

(a) Wilmington Trust, National Association, will act as exchange agent hereunder (in such capacity, the "Exchange Agent") for the delivery of the aggregate cash for distribution to the Holders as of immediately following the Closing pursuant to Section 2.6(c)(ii)(B), Section 2.6(c)(iii)(A) and Section 2.6(c)(iv)(A) and in accordance with the Allocation Schedule as well as the cash that may become distributable to such Holders as and when any portion of the Indemnification Hold-Back Cash Amount or the Expense Fund Amount is released pursuant to the terms of this Agreement. At or prior to the Effective Time, Parent will deposit (or cause to be deposited) with the Exchange Agent, for the benefit of the Holders, the aggregate cash for distribution to the Holders as of immediately following the Closing pursuant to Section 2.6(c)(ii)(B), Section 2.6(c)(iii)(A) and Section 2.6(c)(iv)(A). Parent also will deposit (or cause to be deposited) with the Exchange Agent, for the benefit of the Holders, cash that may become distributable to the Holders as and when any portion of the or the Indemnification Hold-Back Cash Amount is released pursuant to the terms of this Agreement. The Exchange Agent will hold and distribute the cash payable to the Holders pursuant to the provisions of an exchange agreement between Parent and the Exchange Agent (the "Exchange Agreement").



(b) Following the Effective Time, Parent shall cause the Exchange Agent to send to each Company Stockholder of record (including Persons deemed to have acquired shares of Company Stock as a result of the SAFE Conversion and the Note Conversion) a letter of transmittal in a form mutually agreed upon by Parent and the Company (each, a “Letter of Transmittal”) to provide the Exchange Agent with specified information in connection with the receipt, as applicable, of either the amount of Parent Common Stock to be issued to such Holder pursuant to Section 2.6(c)(ii)(A), the amount of cash to be paid to such Holder pursuant to Section 2.6(c)(ii)(B), Section 2.6(c)(iii)(A) or Section 2.6(c)(iv)(A), as well as the potential cash payable and shares of Parent Common Stock delivered, as applicable, to such Holder pursuant to Sections 2.6(c)(ii)(C) through 2.6(c)(ii)(E), Sections 2.6(c)(iii)(B) through 2.6(c)(iii)(D) and Sections 2.6(c)(iv)(B) through 2.6(c)(iv)(D). Upon delivery to the Exchange Agent of such Letter of Transmittal, duly completed and validly executed in accordance with the instructions (and such other customary documents as may reasonably be required by the Exchange Agent), the record owner of such Company Stock shall be entitled to receive in exchange therefor the consideration, if any, provided for herein. If payment of any portion of the consideration provided for herein is to be made to any Person other than the Person in whose name the surrendered shares of Company Stock are registered, it shall be a condition of payment that the Person requesting such payment shall have paid any transfer and other Taxes required by reason of the payment of the applicable portion of the consideration provided for herein to a Person other than the registered holder of such Company Stock surrendered or shall have established to the reasonable satisfaction of Parent that such Tax either has been paid or is not applicable. After the Effective Time, each share of Company Stock shall represent only the right to receive the applicable portion of the consideration provided for herein as contemplated by this ARTICLE II.

(c) Transfer Books; No Further Ownership Rights in Company Stock. The right to receive the applicable portion of the consideration provided for herein in accordance with the terms of this ARTICLE II shall be deemed to have been paid in full satisfaction of all rights pertaining to the shares of Company Stock at the close of business on the day on which the Effective Time occurs, the stock transfer books of the Company shall be closed and thereafter there shall be no further registration of transfers on the stock transfer books of the Surviving Company of the shares of Company Stock that were outstanding immediately prior to the Effective Time.

(d) Termination of Exchange Fund. At any time after six months following the Effective Time, Parent shall be entitled to require the Exchange Agent to deliver to it any amount distributed to the Exchange Agent in respect of such payments that has not been disbursed to the holders of the Company Stock and thereafter such holders may look only to Parent (subject to abandoned property, escheat or other similar Laws) as general creditors thereof with respect to the payment of any portion thereof that may be payable upon surrender of any Company Stock held by such holders.

2.15 No Liability. Notwithstanding anything in this Agreement to the contrary, none of the Parties or the Exchange Agent shall be liable to any Person for any portion of the payments contemplated by this ARTICLE II delivered to a public official pursuant to any applicable abandoned property, escheat or similar Law.

2.16 Withholding Taxes. Notwithstanding anything in this Agreement to the contrary, Parent, the Company, the Surviving Company and the Exchange Agent shall be entitled to deduct and withhold from that portion of any payments contemplated by this ARTICLE II or any other amount payable to a Holder pursuant to this Agreement, and shall pay to the appropriate Taxing Authority, such amounts that are required to be deducted and withheld with respect to the making of such payments under any Tax Law. If, prior to the Closing, Parent determines that any withholding or deduction is required under any provision of Tax law with respect to any portion of any payment to be made by it under this Agreement (other than with respect to any Company Option, or as a result of a failure to provide the certificate specified in Section 6.1(g)(iv) or a properly completed IRS Form W-9 or applicable Form W-8), Parent shall promptly notify the Company in writing (and such notice shall describe the basis for such deduction or withholding) and provide the Company with a reasonable opportunity to provide such forms, certificates or other evidence, and Parent shall cooperate with the Company to eliminate or reduce any such required deduction or withholding. To the extent amounts are so deducted and withheld and paid to the appropriate Taxing Authority, such amounts shall be treated for purposes of this Agreement as having been paid to the Holder in respect of which such deduction and withholding were made.

2.17 Adjustments. Notwithstanding any provision of this ARTICLE II to the contrary (but without in any way limiting the covenants in Section 5.1 (Conduct of Business)), if between the Agreement Date and the Effective Time the outstanding shares of any class or series of Company Stock are changed into a different number of shares or a different class or series by reason of the occurrence or record date of any stock dividend, subdivision, reclassification, recapitalization, split, combination, exchange of shares or similar transaction, the per share consideration payable pursuant to Section 2.6 shall be appropriately adjusted to reflect such stock dividend, subdivision, reclassification, recapitalization, split, combination, exchange of shares or similar transaction.

2.18 Post-Closing Adjustment Amount.

(a) Preparation of Closing Statement. Within one hundred twenty (120) days following the Closing Date, Parent shall prepare and deliver to Holders' Representative a statement as of the Closing (the "Final Calculation") setting forth its calculation of each of the following:

- (i) the Closing Cash;
- (ii) the Closing Net Working Capital;
- (iii) the Company Transaction and Bonus Expenses;
- (iv) the Company Debt; and
- (v) the resulting Final Purchase Price.

The Final Calculation shall be accompanied by such supporting documentation reasonably necessary to derive the numbers set forth therein. The Final Calculation shall be final, conclusive and binding upon the Parties unless Holders' Representative delivers a written notice to Parent of any objection to the Final Calculation (the "Objection Notice") within thirty (30) days (the "Objection Period")

after delivery of the Final Calculation. Any Objection Notice must set forth in reasonable detail (x) any item on the Final Calculation that Holders' Representative believes has not been prepared in accordance with this Agreement and the correct amount of such item and (y) Holders' Representative's alternative calculation of the Closing Cash, the Closing Net Working Capital, the Company Transaction and Bonus Expenses or Company Debt, as the case may be. Any Objection Notice must specify, with reasonable particularity, all facts that form the basis of such disagreements and all statements by Persons (who shall be identified by name) and documents relied upon by Holders' Representative as forming the basis of such disagreement. If Holders' Representative gives any such Objection Notice within the Objection Period, then Holders' Representative and Parent shall attempt in good faith to resolve any dispute concerning the item(s) subject to such Objection Notice. If Holders' Representative and Parent do not resolve the issues raised in the Objection Notice within thirty (30) days of the date of delivery of such notice (the "Initial Resolution Period"), such dispute shall be resolved in accordance with the procedures set forth in Section 2.18(b). Any item or amount which has not been disputed in the Objection Notice shall be final, conclusive and binding on the Parties on the expiration of the Initial Resolution Period (for clarity, excluding any item or amount which is dependent on another item or amount that has been disputed in the Objection Notice).

(b) Resolution of Disputes. If Parent and Holders' Representative have not been able to resolve a dispute within the Initial Resolution Period, either Party may submit such dispute to and such dispute shall be resolved fully, finally and exclusively through the use of an independent international accounting firm selected to serve as such by mutual agreement of Parent and Holders' Representative (such accounting firm, the "Reviewing Party"). The fees and expenses of the Reviewing Party incurred in the resolution of such dispute shall be borne by the parties (in the case of the Holders' Representative, on behalf of the Holders) in such proportion as is appropriate to reflect the relative benefits received by the Holders and Parent from the resolution of the dispute. For example, if Holders' Representative challenges the calculation in the Final Calculation by an amount of \$100,000, but the Reviewing Party determines that Holders' Representative has a valid claim for only \$40,000, Parent shall bear 40% of the fees and expenses of the Reviewing Party and Holders' Representative on behalf of the Holders shall bear the other 60% of such fees and expenses. The Reviewing Party shall determine (with written notice thereof to Holders' Representative and Parent) as promptly as practicable, but in any event within thirty (30) days following the date on which Final Calculation and written submissions detailing the disputed items are delivered to the Reviewing Party (i) whether the Final Calculation was prepared in accordance with the terms of this Agreement or, alternatively, (ii) only with respect to the disputed items submitted to the Reviewing Party, whether and to what extent (if any) the Final Calculation requires adjustment and a written explanation in reasonable detail of each such required adjustment, including the basis therefor (it being understood that any determination of a disputed item shall be not greater or less than the amount of such disputed item as proposed by Parent in the Final Calculation or as proposed by Holders' Representative in the Objection Notice). Parent and Holders' Representative shall require the Reviewing Party to enter into a confidentiality agreement on terms agreeable to Parent, Holders' Representative and the Reviewing Party. The procedures of this Section 2.18(b) are exclusive and the determination of the Reviewing Party shall be final and binding on the Parties. The decision rendered pursuant to this Section 2.18(b) may be filed as a judgment in any court of competent jurisdiction.

(c) Post-Closing Purchase Price Adjustment.

(i) The “Post-Closing Adjustment” shall be an amount equal to the Final Purchase Price *less* the Upfront Purchase Price and, for the avoidance of doubt, may be a positive or a negative number or zero.

(ii) Without limiting the provisions of Section 8.2(a)(i) (except to the extent of any double counting that would otherwise result), if the Post-Closing Adjustment is a negative number, the Indemnification Hold-Back Cash Amount and the Indemnification Hold-Back Shares (valued at the Indemnification Hold-Back Shares Value) shall be reduced in proportion to the their relative values as of the Closing Date by the absolute value of the Post-Closing Adjustment (i.e., offsetting the Post-Closing Adjustment against the Indemnification Hold-Back Cash Amount and the Indemnification Hold-Back Shares).

(iii) If the Post-Closing Adjustment is a positive number, Parent shall deliver to the Holders in accordance with the Allocation Schedule (or cause to be delivered by the Exchange Agent) cash in an amount equal to the Post-Closing Adjustment.

2.19 Indemnification Hold-Back and Payment. On the date that is six (6) months following the Closing Date (such date, the “First Indemnification Hold-Back Payment Date”), Parent shall deliver to the Holders in accordance with the Allocation Schedule, as it may be adjusted (or cause to be delivered by the Exchange Agent), cash and Indemnification Hold-Back Shares (valued at the Indemnification Hold-Back Shares Value), in proportion to the their relative values as of the Closing Date, in an amount equal to \$2,500,000 in the aggregate from (i) the initial Indemnification Hold-Back Cash Amount, *less* any reductions to the Indemnification Hold-Back Cash Amount made in accordance with Section 2.18(c)(ii) or ARTICLE VIII, and (ii) the Indemnification Hold-Back Shares, *less* any reductions to the Indemnification Hold-Back Shares made in accordance with Section 2.18(c)(ii) or ARTICLE VIII, it being understood that if such reductions under the foregoing clauses (A) and (B) equal or exceed \$2,500,000, then no release to the Holders will be made on such date; provided, however, that if, when any amount would otherwise be distributed pursuant to this Section 2.19 on the First Indemnification Hold-Back Payment Date, there shall exist a timely made good faith claim by Parent in accordance with ARTICLE VIII to exercise the Offset Right, all or a portion of such amount as determined by Parent (in its reasonable discretion) to represent the Losses at issue specified in such claim (including, if applicable, as to any specific Holder) shall, subject to compliance with the procedures specified in ARTICLE VIII, be withheld from payment until such time as the claim has been finally resolved, in which case the Offset Right shall apply against such portion of the amount at issue resolved in favor of Parent and the balance of any withheld portion (if applicable) shall be distributed to the Holders (or, as applicable, to the affected Holders) as contemplated by this Agreement. On the date that is twelve (12) months following the Closing Date (such date, the “Second Indemnification Hold-Back Payment Date”), Parent shall deliver to the Holders in accordance with the Allocation Schedule, as it may be adjusted (or cause to be delivered by the Exchange Agent), cash in an amount equal to the then-current balance of the Indemnification Hold-Back Cash Amount and the remaining Indemnification Hold-Back Shares, as applicable (reflecting any reductions to the Indemnification Hold-Back Cash Amount and the Indemnification Hold-Back Shares made in accordance with Section 2.18(c)(ii) or ARTICLE VIII);

provided, however, that if, when any amount would otherwise be distributed pursuant to this Section 2.19 on the Second Indemnification Hold-Back Payment Date, there shall exist a timely made good faith claim by Parent in accordance with ARTICLE VIII to exercise the Offset Right, all or a portion of such amount as determined by Parent (in its reasonable discretion) to represent the Losses at issue specified in such claim (including, if applicable, as to any specific Holder) shall, subject to compliance with the procedures specified in ARTICLE VIII, be withheld from payment until such time as the claim has been finally resolved, in which case the Offset Right shall apply against such portion of the amount at issue resolved in favor of Parent and the balance of any withheld portion (if applicable) shall be distributed to the Holders (or, as applicable, to the affected Holders) as contemplated by this Agreement.

2.20 Effect of the Forward Merger on Capital Stock. At the effective time of the Forward Merger, by virtue of the Forward Merger and without any action to be taken on the part of the holder of any shares of the Company Stock or any units of membership interest in Merger Sub B, or on the part of the Company, Parent, Merger Sub B or any other Person:

(a) each share of capital stock of the Company outstanding immediately prior to the effective time of the Forward Merger shall be canceled and shall cease to exist and no consideration shall be delivered in exchange therefor; and

(b) each unit of membership interest in Merger Sub B outstanding immediately prior to the effective time of the Forward Merger shall remain unchanged and continue to remain outstanding as a unit of membership interest in the Surviving Company. At the effective time of the Forward Merger, Parent shall continue as the sole holder of membership interests in the Surviving Company.

2.1 Tax Consequences. For federal income Tax purposes, (i) the Mergers, taken together, are intended to constitute a “reorganization” within the meaning of Section 368(a) of the Code and the Treasury Regulations promulgated thereunder, in accordance with Revenue Ruling 2001-46, 2001-2 CB 321, and (ii) the Parties adopt this Agreement as a “plan of reorganization” within the meaning of Treasury Regulations Section 1.368-2(g); provided, however, that (x) notwithstanding any provision herein to the contrary, no Party and no Parent Indemnified Person (other than a Person in breach of Section 5.8(j)) shall have any liability to any Holder with respect to the tax treatment or the tax consequences of the Mergers or the other Transactions and (y) each Holder shall be solely responsible with respect to the tax treatment of the Mergers or the other Transactions as to such Holder as well as the tax consequences thereof.

### **ARTICLE III**

#### **REPRESENTATIONS AND WARRANTIES OF THE COMPANY**

As a material inducement to Parent, Merger Sub A and Merger Sub B to enter into this Agreement and effect the Mergers, with the understanding that Parent, Merger Sub A and Merger Sub B are relying thereon in entering into this Agreement and consummating the Transactions (including the Mergers), the Company hereby represents and warrants to Parent and Merger Sub A and Merger Sub B, subject to such exceptions as are set forth in the Disclosure Schedule (provided

that the Disclosure Schedule shall be arranged in sections corresponding to the numbered and lettered sections and subsections of this Agreement, and the disclosures in any section or subsection of the Disclosure Schedule shall qualify other sections and subsections of this Agreement only to the extent it is reasonably apparent that such disclosure is applicable to such other sections and subsections), as of the Agreement Date and as of the Closing Date as follows:

### 3.1 Organizational Matters.

(a) Valid Existence; Good Standing. The Company is a corporation duly incorporated, validly existing and in good standing under the Laws of the State of Delaware and has all requisite power and authority to own or lease all of its properties and assets and to carry on its business as now conducted. The Company is duly licensed or qualified to do business and is in good standing under the laws of Delaware and each other jurisdiction in which the nature of the business conducted by it or the character or location of the properties and assets owned, leased or licensed by it makes such licensing or qualification necessary.

(b) Operations. Section 3.1(b) of the Disclosure Schedule lists each state and country in which the Company has any employee or officer (each a "Current Employee") or has assets or leases Real Property. Current Employees, together with any former employees or officers of the Company, are referred to herein individually as an "Employee" and collectively as "Employees." Section 3.1(b) of the Disclosure Schedule also lists each state and country in which the Company has any individual consultant or independent contractor that is currently engaged and is actively providing services to the Company (each a "Current Consultant") as of the Agreement Date and any current director (who is not an Employee). Current Consultants, together with any director (who is not an Employee) of the Company, are referred to herein individually as a "Consultant" and collectively as "Consultants."

(c) Subsidiaries. The Company has no Subsidiaries. The Company does not own and never has owned, directly or indirectly, any shares of capital stock, voting securities, or equity interests in any Person. The Company has no obligation to make an investment (in the form of a purchase of equity securities, loan, capital contribution or otherwise) directly or indirectly in any Person.

(d) Corporate Documents. The Company has delivered or made available to Parent true and complete copies of the certificate of incorporation and bylaws of the Company in each case as the same may have been amended from time to time (the "Company Charter Documents"). All such Company Charter Documents are unmodified and in full force and effect and the Company is not in violation of any provision of the Company Charter Documents. The Company's board of directors has not proposed or approved any amendment of any of the Company Charter Documents. The Company has delivered or made available to Parent and its representatives true and complete copies of the stock ledger of the Company and of the minutes of all meetings of the Company Stockholders, the board of directors and each committee of the board of directors of the Company held since the Reference Date.

(e) Officers and Directors. Section 3.1(e) of the Disclosure Schedule lists all of the directors and officers of the Company as of the Agreement Date.

### 3.2 Authority; Noncontravention; Voting Requirements.

(a) Power and Authority. Subject to obtaining the Requisite Stockholder Approval, the Company has all necessary corporate power and authority to execute and deliver this Agreement and the Transaction Agreements to which it is a party and to perform all of its obligations hereunder and thereunder and to consummate the Transactions (including the Mergers).

(b) Due Authorization of Agreement. The Company's board of directors, at a meeting duly called and held pursuant to the DGCL, has unanimously (i) approved and declared advisable and in the best interests of the Company and the Company Stockholders the Transaction Agreements and the Transactions (including the Mergers) and (b) recommended that the Company Stockholders adopt this Agreement and approve the Transactions (including the Mergers). The execution, delivery and performance by the Company of this Agreement and the Transaction Agreements to which it is a party and the consummation by it of the Transactions (including the Mergers) have been duly authorized by the Company's board of directors and, subject to adoption of this Agreement by the affirmative vote or written consent of the Company Stockholders representing the requisite number of shares of Company Stock required under the DGCL and the Company Charter Documents (the "Requisite Stockholder Approval"), no other action on the part of the Company's board of directors or the Company Stockholders is necessary to authorize the execution, delivery and performance by the Company of this Agreement and the Transaction Agreements to which it is a party and the consummation by it of the Transactions (including the Mergers).

(c) Valid and Binding Agreements. This Agreement and each of the other Transaction Agreements to which the Company is a party have been, or will be as of the Closing Date, duly executed and delivered by the Company. Assuming due authorization, execution and delivery of this Agreement and the other Transaction Agreements by the other Parties hereto and thereto, this Agreement constitutes and the other Transaction Agreements shall, when executed and delivered, constitute, the legal, valid and binding obligations of the Company, enforceable against the Company in accordance with their respective terms, except to the extent that their enforceability may be limited by applicable bankruptcy, insolvency, reorganization, moratorium, or other similar laws affecting the enforcement of creditors' rights generally and by general equitable principles.

(d) No Conflict. Except as set forth in Section 3.2(d) of the Disclosure Schedule, neither the execution and delivery by the Company of this Agreement nor the consummation of the Transactions shall (i) conflict with or result in any violation of or default under (with or without notice or lapse of time, or both) or (ii) or give rise to a right of termination, cancellation, modification or acceleration of any obligation or loss of any benefit or result in the creation of any Lien upon any of the properties or assets of the Company (any such event, a "Conflict") under (x) any provision of the Company Charter Documents or any resolutions adopted by the Company's board of directors or the Company Stockholders, (y) any Material Contract, or (z) any Permit issued to the Company or any Order or Law applicable to the Company or any of its properties or assets (whether tangible or intangible). Following the Closing Date, the Company shall continue to be permitted to exercise all of its rights under all Material Contracts without the payment of any additional amounts or consideration other than ongoing fees, royalties or payments which the Company would otherwise

be required to pay pursuant to the terms of such Material Contracts had the Transactions contemplated by this Agreement not occurred.

### 3.3 Capitalization.

(a) Authorized and Issued Securities. The authorized capital stock of the Company consists of 11,000,000 shares of Company Stock and no shares of preferred stock. The capitalization of the Company is as follows: (i) 7,934,691 shares of Company Stock are issued and outstanding, (ii) no shares of Company Stock are held by the Company in its treasury, (iii) 2,548,808 shares of Company Stock are issuable in satisfaction of the Company SAFEs in connection with the Transactions, (iv) 119,791 shares of Company Stock are issuable in satisfaction of the Company Note in connection with the Transactions, (v) 185,000 shares of Company Stock are subject to outstanding options under the Company Option Plan (i.e., the Company Options), (vi) no outstanding options have been issued outside the Company Option Plan, and (vii) a sufficient number of Company Stock is available for issuance upon exercise or conversion of all outstanding Company Options, all Company SAFEs and the Company Note. Except as set forth in this Section 3.3(a), there are no, and as of the Closing (after giving effect to the issuance of shares of Company Stock in respect of the Company SAFEs and Company Note) there shall be no, shares of Company Stock, voting securities or equity interests of the Company issued and outstanding or any subscriptions, options, warrants, calls, convertible or exchangeable securities, rights, commitments or agreements of any character providing for the issuance of any shares of capital stock, voting securities or equity interests of the Company, including any representing the right to purchase or otherwise receive any Company Stock. The Company has never issued physical or electronic stock certificates in respect of the Company Stock.

(b) Ownership of Stock and Options. Section 3.3(b) of the Disclosure Schedule sets forth a complete and accurate list of each of (i) the record holders of each class or series of the Company Stock and the number of shares of each such class or series of Company Stock held by each Holder as of the Agreement Date and the number of shares or other securities into which such Company Stock is convertible, listed by class and series, (ii) all Company Options and the Company Optionholders thereof as well as the exercise prices, dates of grant and numbers of shares of Company Stock for which such Company Options are exercisable by each such Company Optionholder as of the Agreement Date, (iii) all Company SAFEs and the holders thereof as well as the shares of Company Stock issuable in full satisfaction thereof, and (iv) the Company Note and the holder thereof as well as the shares of Company Stock issuable in full satisfaction thereof. All issued and outstanding shares of Company Stock are owned of record and beneficially as set forth in Section 3.3(b) of the Disclosure Schedule.

(c) Valid Issuance; No Preemptive or Other Rights.

(i) All issued and outstanding shares of Company Stock (x) are, and all shares of Company Stock that may be issued pursuant to the exercise of Company Options and the exercise or conversion of outstanding Company SAFEs and the Company Note shall be, when issued in accordance with the respective terms thereof, duly authorized, validly issued, fully paid and nonassessable, (y) are not subject to, nor were issued in violation of, any preemptive rights, rights of first offer or refusal, co-sale rights or similar rights arising under applicable Law or pursuant



to the Company Charter Documents, or any Contract to which the Company is a party or by which it is bound and (z) have been offered, issued, sold and delivered by the Company in compliance with all registration or qualification requirements (or applicable exemptions therefrom) of applicable federal, state and foreign securities Laws. Each Company Option granted under the Company Option Plan was duly authorized by all requisite corporate action on a date no later than the grant date and has an exercise price per share at least equal to the fair market value of a share of Company Stock on the grant date. The Company is not under any obligation to register any of its presently outstanding securities, or securities issuable upon exercise or conversion of such securities, under the Securities Act or any other Law.

(ii) The rights, preferences and privileges of the Company Stock are as set forth in the Company Charter Documents. There is no liability for dividends accrued and/or declared but unpaid with respect to the outstanding Company Stock. The Company is not subject to any obligation to repurchase, redeem or otherwise acquire any shares of Company Stock or any other voting securities or equity interests (or any options, warrants or other rights to acquire any shares of Company Stock, voting securities or equity interests) of the Company. To the Company's Knowledge, there are no voting trusts or other agreements or understandings with respect to the voting of the Company Stock. There are no outstanding or authorized stock appreciation, phantom stock, profit participation, or other similar rights with respect to the Company.

(iii) True and complete copies of all form agreements and instruments (and any amendments thereto, if applicable) relating to or issued under the Company Option Plan have been delivered or made available to Parent; there are no agreements to amend, modify or supplement such agreements or instruments from the forms thereof provided or made available to Parent; and all equity grants under the Company Option Plan have been made pursuant to agreements and instruments and do not deviate from such form agreements and instruments.

3.4 No Consents or Approvals. Except for the filing of the Certificates of Merger with the Secretary of State of the State of Delaware pursuant to the DGCL and the receipt of the Requisite Stockholder Approval, no consents or approvals of, filings with, or notices to any Governmental Authority are required to be made or obtained by the Company for the valid execution, delivery and performance of this Agreement or the other Transaction Agreements to which it is a party, and the consummation of the Transactions (including the Mergers).

### 3.5 Financial Matters.

#### (a) Financial Statements.

(i) Prior to the Agreement Date, the Company has delivered or made available to Parent true and complete copies of the following financial statements of the Company (collectively, the "Financial Statements"): (x) the unaudited balance sheet and related unaudited statements of income, cash flows and stockholders' equity as of and for the fiscal year ended December 31, 2018 (December 31, 2018, the "Balance Sheet Date"); and (y) the unaudited balance sheet and related unaudited statements of income, cash flows and stockholders' equity as of and for the nine-month period ended September 30, 2019 (the "Interim Balance Sheet" and such date the "Interim Balance Sheet Date").

(ii) The books and records of the Company (x) have been and are being maintained in accordance with the policies described in Section 3.5(a)(ii) of the Disclosure Schedule and (y) are complete, properly maintained and do not contain or reflect any inaccuracies or discrepancies.

(b) Fair Presentation. The Financial Statements were prepared on a consistent basis throughout the periods covered thereby. The Financial Statements fairly present the financial condition of the Company as of such dates and the results of operations of the Company for such periods, and were derived from and are consistent with the books and records of the Company; provided, however, that the Financial Statements as of and for the period ended on the Interim Balance Sheet Date are subject to normal year-end adjustments (which are not expected to be material individually or in the aggregate).

(c) [RESERVED].

(d) No Undisclosed Liabilities. The Company does not have any Liabilities that are not reflected or reserved against on the face of (and not in the notes to) the Financial Statements, except Liabilities (i) incurred by the Company in connection with the preparation, execution, delivery and performance of the Transaction Agreements and included in the Company Transaction and Bonus Expenses, or (ii) which have arisen in the Ordinary Course of Business since the Interim Balance Sheet Date.

(e) Off-Balance-Sheet Arrangements. There are no “off-balance-sheet arrangements” (within the meaning of Item 303 of Regulation S-K promulgated by the SEC) with respect to the Company.

(f) Bank Accounts. Section 3.5(f) of the Disclosure Schedule sets forth an accurate list (account type, name and address) of each bank and other financial institution in which the Company maintains an account (whether checking, savings or otherwise), lock box or safe deposit box and the names of the persons having signing authority or other access thereto. All cash in such accounts is held in demand deposits and is not subject to any restriction as to withdrawal.

(g) Company Debt. Except as set forth in Section 3.5(g) of the Disclosure Schedule, there is no Company Debt. With respect to each item of Company Debt, Section 3.5(g) of the Disclosure Schedule accurately sets forth the name of the creditor, the Contract under which such debt was issued, the principal amount of the debt and a description of the collateral if secured. The Company is not in default with respect to any outstanding Company Debt or any instrument relating thereto, nor is there any event which, with the passage of time or giving of notice, or both, would result in a default, and no such Company Debt or any instrument or agreement thereto purports to limit the operation of the Company’s business. Complete and correct copies of all instruments (including all amendments, supplements, waivers and consents) relating to any Company Debt have been provided or made available to Parent.

3.6 Absence of Certain Changes or Events. Since the Balance Sheet Date, (i) there has not been a Company Material Adverse Effect and (ii) there has not occurred any damage, destruction or loss (whether or not covered by insurance) of any material asset of the Company that adversely

affects the use thereof. Since the Balance Sheet Date, the Company has been operated in the Ordinary Course of Business and, without limiting the foregoing, the Company has not taken any action described in Section 5.1 that if taken after the Agreement Date and prior to the Closing would violate such provision.

3.7 Legal Proceedings. Since the Reference Date, there have not been and there are no pending Actions, and to the Knowledge of the Company, there are no Actions threatened, in either case, by or against the Company, its properties or assets or any of the Company's officers or directors in their capacities as such.

3.8 Compliance with Laws; Permits.

(a) The Company is and has at all times been in compliance in all respects with all Laws applicable to the Company or any of its assets, business or operations, including the Health Care Laws; provided, however, for the avoidance of doubt, Laws applicable to the Company or any of its assets, business or operations means those Laws that apply to the Company based on its operations as of a particular date with respect to which compliance would be required. The Company holds all Permits necessary to conduct its business and operate its assets, and all such Permits are in full force and effect. The Company is and has always been in compliance in all respects with the terms of all Permits necessary to conduct its business and to lease and operate its properties and facilities. Section 3.8(a) of the Disclosure Schedule sets forth a list of all Permits that are held by the Company. The Company has not received written notice from any Governmental Authority claiming or alleging that the Company was not in compliance with all Laws applicable to the Company or its business or operations; the Company has not received in writing a notice of assessment of any penalty with respect to any alleged failure by the Company to have or comply with any Permit.

(b) Neither the Company, nor any of its officers, directors, Employees, Consultants or agents, have, in the operating of the Company's business, engaged in any activities which are prohibited or are cause for criminal or civil penalties or mandatory or permissive exclusion from Medicare, Medicaid or any other state or federal health care program under 42 U.S.C. §§ 1320a-7, 1320a-7a, 1320a-7b or 1395nn, 5 U.S.C. § 8901 et seq. (the Federal Employees Health Benefits program statute), or the regulations, agency guidance, or similar legal requirement promulgated pursuant to such statutes or any analogous state or local Laws.

(c) Neither the Company, nor any of its directors, officers, Employees, or, to the Company's Knowledge, any of its Consultants or agents, in their capacity as officers, directors, Employees, Consultants or agents of the Company, has, directly or indirectly given any illegal gift, contribution, payment or similar benefit to any supplier, customer, governmental official or employee or other Person.

(d) (i) Each Current Employee and Current Consultant of the Company required to be licensed by an applicable Governmental Authority, professional body and/or medical body has such licenses, (ii) such licenses are in full force and effect and (iii) to the Knowledge of the Company, there are no facts or circumstances that could reasonably be expected to result in any such licenses being suspended, revoked or otherwise lapse prematurely.

(e) Neither the Company nor any of its Employees, or, to the Company's Knowledge, any of its Consultants, agents or vendors has been excluded, suspended, debarred or otherwise sanctioned by any Governmental Authority, including the U.S. Department of Health and Human Services Office of Inspector General or the General Services Administration.

(f) The Company is and has at all times been in compliance in all respects with all applicable Laws relating to the privacy, security, use and disclosure of health information, including "protected health information" or "PHI" as defined under HIPAA and information related to genetic testing and genetic test results, created, used, disclosed or stored in the course of the operations of the Company, including HIPAA and all applicable state, federal and international laws regarding the privacy and security of health information, including genetic testing and results, provided, however, for the avoidance of doubt, applicable Laws means those Laws that apply to the Company based on its operations as of a particular date with respect to which compliance would be required. The Company has the necessary agreements with all of the Company's "business associates" as such term is defined by and as such agreements are required by HIPAA. True and complete copies of all current HIPAA and health information privacy policies that are used by the Company have been provided or made available to Parent and such privacy policies are in compliance with all applicable Laws relating to the privacy, security, use and disclosure of health information. The Company has at all times complied in all respects with all rules, policies, and procedures established by the Company from time to time and as applicable with respect to privacy, security, data protection, or the collection and use of health information and genetic testing information created, used, disclosed or stored in the course of the operations of the Company. No actions have been asserted or, to the Knowledge of the Company, threatened against the Company by any person alleging a violation of such person's privacy, personal, or confidentiality rights under any such rules, policies, or procedures.

(g) With respect to all health information, PHI, and genetic testing information as described in Section 3.8(f), the Company has taken reasonable steps (including implementing and monitoring compliance with administrative, physical and technical safeguards) to ensure that such information is protected against loss and against unauthorized access, use, modification, disclosure, or other misuse. The Company maintains and has implemented security policies and procedures as required by HIPAA and other applicable laws. Since the Reference Date, there has been no "Breach of Unsecured PHI," as defined under HIPAA, and no "Security Incident" as defined under HIPAA, resulting in the unauthorized use or disclosure of PHI. The Company maintains systems, policies and procedures to respond to incidents and complaints alleging violations of applicable privacy or security standards and to identify and report all Breaches of Unsecured Protected Health Information in accordance with Company's legal and contractual obligations.

### 3.9 Taxes.

(a) The Company has paid all material Taxes owed by the Company, whether or not shown on any Tax Return. Since the Balance Sheet Date, the Company has incurred no Liability for Taxes arising outside of the Ordinary Course of Business. There are no Liens for Taxes (other than Permitted Liens). The Company is not subject to any currently effective waiver of any

statute of limitations in respect of Taxes and has not agreed to any currently effective extension of time with respect to a Tax assessment or deficiency.

(b) The Company has timely filed, taking into account any extensions granted to the Company which are set forth in Section 3.9(b) of the Disclosure Schedule as to Tax Returns not yet filed as of the Agreement Date, all Tax Returns that are required to have been filed by or with respect to the Company. All such Tax Returns were, when filed, true, correct and complete in all respects. The Company is not the beneficiary of any currently effective extension of time within which to file any Tax Return. No written claim has ever been made by any Taxing Authority in a jurisdiction where the Company does not file Tax Returns that it is or may be subject to taxation by that jurisdiction, which claim has not been finally resolved.

(c) The Company has withheld and paid all Taxes required to have been withheld and paid by it in connection with amounts paid or owing by the Company to any Employee, Consultant, creditor, stockholder or other third party.

(d) No deficiencies for any Taxes have been proposed or assessed, in each case in writing, against or with respect to any Taxes due by, or Tax Returns of, the Company, which deficiencies have not been finally resolved, and the Company has not received written notice of any audit, assessment, dispute or claim concerning any Tax Liability of the Company, which audit, assessment, dispute or claim has not been finally resolved.

(e) The Company (i) is not nor has never been a member of an affiliated group (other than a group the common parent of which is Company) filing a consolidated federal income Tax Return and (ii) has no Liability for Taxes of any Person arising from the application of Treasury Regulation Section 1.1502-6 or any analogous provision of state, local or foreign Tax Law, or as a transferee or successor, or pursuant to a Tax Sharing Agreement.

(f) The Company has not been a United States real property holding corporation within the meaning of Section 897(c)(2) of the Code during the applicable period specified in Section 897(c)(1)(A)(ii) of the Code.

(g) The Company has never made an election under Section 965(h) of the Code.

(h) The Company has not made any payments, is not obligated to make any payments and is not a party to any agreement, including this Agreement, that under certain circumstances could obligate it to make any payments to any “disqualified individual” within the meaning of Section 280G of the Code that shall not be fully deductible under Section 280G of the Code.

(i) The Company shall not be required to include any item of income in, or exclude any item of deduction from, taxable income for any taxable period (or portion thereof) ending after the Closing Date as a result of any: (i) change in method of accounting requested by the Company prior to the Closing; (ii) agreement entered into by the Company with any Taxing Authority prior to the Closing; (iii) installment sale or open transaction disposition made by the Company prior to the Closing; (iv) prepaid amounts received or paid by the Company prior to the

Closing other than amounts consistent with the deferred revenue shown on the Estimated Balance Sheet; (v) cancellation of indebtedness income recognized by the Company pursuant to Section 108 of the Code with respect to the Company Debt that is properly allocable to the Pre-Closing Tax Period; or (vi) deferral of income under Section 108(i) of the Code as a result of any reacquisition of a debt instrument by the Company occurring prior to the Closing. The Company has not utilized the long-term method of accounting prior to the Closing.

(j) Within the last two years, the Company has not distributed stock of another Person, nor, to the Company's Knowledge, has its stock been distributed by another Person, in a transaction that was purported or intended to be governed in whole or in part by Section 355 or Section 361 of the Code.

(k) The Company does not have nor has it ever had a permanent establishment in any foreign country. The Company does not engage nor has it ever engaged in a trade or business in any foreign country that would cause the Company to be obligated to pay Taxes or file Tax Returns in such country.

(l) The Company has delivered or made available to Parent correct and complete copies of all federal and state income Tax Returns filed since January 1, 2013 and all examination reports and statements of deficiencies filed, or assessed against and agreed to, by the Company with respect to Taxes for all taxable periods ending on or prior to the Agreement Date.

(m) The Company is not and has never been a "United States shareholder" within the meaning of Section 951(b) with respect to any Person that is or was treated as a "controlled foreign corporation" as defined in Section 957 of the Code. The Company does not own an equity interest in any Person that is treated as a "passive foreign investment company" within the meaning of Section 1297 of the Code.

(n) Section 3.9(n) of the Disclosure Schedule lists all jurisdictions (whether foreign or domestic) in which the Company pays Taxes and the nature of the Taxes paid by the Company.

(o) The Company has not been a party to any "listed transaction," as defined in Section 6707A(c)(2) of the Code and Treasury Regulation Section 1.6011-4(b)(2).

(p) No power of attorney that has been granted by the Company with respect to any matter relating to the Taxes of the Company is currently in force.

(q) The Company has never (i) made an election under Section 1362 of the Code to be treated as an S corporation for federal income tax purposes or (ii) made a similar election under any comparable provision of any state, local or foreign Tax Law.

(r) The Company has never been a "personal holding company" within the meaning of Section 542 of the Code.

(s) The Company is not and has never have been a party to a transaction or agreement that is in conflict with the Tax rules on transfer pricing in any relevant jurisdiction and all transactions and agreements between or among the Company and any related parties and/or the terms thereof have been conducted in an arm's length manner consistent with the Company's transactions or agreements with unrelated third parties.

### 3.10 Employee Benefits and Labor Matters.

(a) Plans and Arrangements. Section 3.10(a) of the Disclosure Schedule sets forth a true and complete list of all Company Plans.

(b) Plan Documents. With respect to each Company Plan, the Company has delivered or made available to Parent a current, accurate and complete copy thereof (including amendments) or a copy of the representative form agreement thereof and, to the extent applicable, true and complete copies of the following documents with respect to each Company Plan: (i) any Contracts or agreements, plans and related trust documents, insurance Contracts or other funding arrangements, in each case as currently in effect, and all amendments thereto; (ii) the results of the non-discrimination testing since the Reference Date; (iii) Forms 5500 and all schedules thereto since the Reference Date; (iv) the most recent actuarial report, if any; (v) the most recent IRS determination or opinion letter; (vi) all correspondence, rulings or opinions issued by the DOL, IRS or any other Governmental Authority and all material correspondence from the Company to the DOL, IRS or other Governmental Authority other than routine reports, returns or other filings since the Reference Date; (vii) the most recent summary plan descriptions and any summaries of material modifications with respect thereto; and (viii) written descriptions of all non-written Company Plans.

(c) ERISA. No Company Plan is subject to Title IV of ERISA or is otherwise a Defined Benefit Plan as defined in Section 3(35) of ERISA (a "Title IV Plan") and neither the Company nor any other trade or business (whether or not incorporated) that, together with the Company, would be treated as a single employer under Section 414(b) or (c) of the Code or, solely for purposes of Section 302 of ERISA and Section 412 of the Code, is treated as a single employer under Section 414(m) or (o) of the Code (each an "ERISA Affiliate") has incurred any liability pursuant to Title IV of ERISA that remains unsatisfied. Neither the Company nor any ERISA Affiliate has sponsored, contributed or had an obligation to contribute, to any Title IV Plan, or any money purchase pension plan subject to Section 412 of the Code, within the past six (6) years. No Company Plan is or has been a multiemployer plan within the meaning of Section 3(37) of ERISA (a "Multiemployer Plan") or a multiple employer welfare arrangement within the meaning of Section 3(40) of ERISA. During the past six (6) years, neither the Company nor any of its ERISA Affiliates has completely or partially withdrawn from any Multiemployer Plan and no termination liability to the United States Pension Benefit Guaranty Corporation or withdrawal liability to any Multiemployer Plan has been or is reasonably expected to be incurred with respect to any Multiemployer Plan by the Company nor any of its ERISA Affiliates. Neither the Company nor any other "disqualified person" or "party in interest," as defined in Section 4975 of the Code and Section 3(14) of ERISA, respectively, has, to the Company's Knowledge, engaged in any "prohibited transaction," as defined in Section 4975 of the Code or Section 406 of ERISA (which is not otherwise exempt), with respect to any Company Plan, nor, to the Company's Knowledge, have there been

any fiduciary violations under ERISA that could subject the Company (or any Employee) to any penalty or tax under Section 502(i) of ERISA or Section 4975 of the Code.

(d) Status of Plans. Company Plans intended to qualify under Section 401 of the Code or other tax-favored treatment under Subchapter B of Chapter 1 of Subtitle A of the Code are so qualified and any trusts intended to be exempt from federal income taxation under the Code are so exempt. To the Knowledge of the Company, (i) nothing has occurred with respect to the operation of any Company Plans that could reasonably be expected to cause the loss of such qualification or exemption; and (ii) no event has occurred and no condition exists with respect to any Company Plan subject to the requirements of Code Section 401(a) that would subject the Company to any Tax, fine, Lien, penalty or other liability imposed by ERISA, the Code or other applicable Laws. For each Company Plan with respect to which a Form 5500 has been filed, no adverse change has occurred with respect to the matters covered by the most recent Form 5500 since the date thereof. None of the Company Plans provides for post-employment life or health coverage for any participant or any beneficiary of a participant, except as may be required under Part 6 of Subtitle B of Title I of ERISA, Section 4980B of the Code or any similar state law and at the expense of the participant or the participant's beneficiary.

(e) Contributions to Plans. All contributions required to have been made under any of the Company Plans or by Law (without regard to any waivers granted under Section 412 of the Code) have been timely made. There are no unfunded liabilities or benefits under any Company Plans that are not reflected in the Financial Statements.

(f) Conformity with Laws. All Company Plans have been established, operated and maintained in accordance with their terms and with all applicable provisions of ERISA, the Code and other Laws. All amendments and actions required to bring the Company Plans into conformity in all material respects with all of the applicable provisions of the Code, ERISA and other applicable Laws have been made or taken, except to the extent that such amendments or actions are not required by Law to be made or taken until a date after the Closing. There are no pending Actions arising from or relating to the Company Plans (other than routine benefit claims). There are no filings or applications pending with respect to the Company Plans with the IRS, the DOL or any other Governmental Authority. The Company has satisfied obligations applicable to the Company under Section 4980B of the Code, Part 6 of Subtitle B of Title I of ERISA and each applicable state law relating to continuation of health or other coverage to any Employee (or any dependent or former dependent of such Employee) with respect to any qualifying event that has occurred on or before the Closing Date. Section 3.10(f) of the Disclosure Schedule lists each individual who, as of the Agreement Date, (i) is currently receiving continuation coverage under COBRA under a Company Plan, or (ii) is within his or her COBRA election period.

(g) Leased Employees. The Company has no Employees who are "leased employees" (as that term is defined in Section 414(n) of the Code) and has no liability, contingent or otherwise, for any federal, state or local workers' compensation contribution, with respect to any Employees who are leased employees.

(h) Employment Matters.



(i) Section 3.10(h)(i) of the Disclosure Schedule sets forth a true and complete listing of the Current Employees and the Current Consultants, as of the Agreement Date, including each such person's name, job title or function and job location, as well as a true, correct and complete listing of his or her current salary or wage payable by the Company, and for each such Current Employee or such Current Consultant, the amount of all incentive compensation paid or payable to such person for the current calendar year, and each such Current Employee's or such Current Consultant's current status (as to full time or part time, exempt or nonexempt and temporary or permanent status and as to classification as an employee, consultant or independent contractor). No Current Employees are on leave or disability. Other than as fully reflected or specifically reserved against in the Financial Statements (or as otherwise expressly permitted or required pursuant to this Agreement), the Company has not paid or contractually promised to pay any bonuses, commissions or incentives to any Employee or Consultant. The Company has delivered or made available to Parent a true and complete copy of the employee handbook for the Company, if any, and all other employment policies, if any, currently applicable to any Current Employee or Current Consultant.

(ii) To the Company's Knowledge, no officer, Current Consultant or Current Employee at the level of manager or higher has disclosed any plans to terminate his, her or their employment or other relationship with the Company.

(iii) The Company has a USCIS Form I-9 that is validly and properly completed in accordance with applicable Law for each Employee with respect to whom such form is required by applicable Law. The Company has complied with all Department of Homeland Security, DOL and State Department regulations governing the employment of foreign national workers. If applicable, the Company has complied with all Laws related to H-1B workers, including the payment of wages and the maintenance of public access files related to the filing of ETA-9035 Labor Condition Applications.

(iv) Except as set forth in Section 3.10(h)(iv) of the Disclosure Schedule:

(A) since the Reference Date: (x) the Company has paid or made provision for payment of all salaries and wages, which are payable by the Company to any Employees, accrued through the Closing Date and is in compliance with all applicable Laws respecting employment and employment practices, terms and conditions of employment, collective bargaining, immigration, wages, hours and benefits, non-discrimination in employment, workers' compensation, including Title VII of the Civil Rights Act of 1964, the Age Discrimination in Employment Act of 1967, the Equal Employment Opportunity Act of 1972, ERISA, the Equal Pay Act, the National Labor Relations Act, the Fair Labor Standards Act, the Americans with Disabilities Act of 1990, the Vietnam Era Veterans Reemployment Act, the Family and Medical Leave Act, Occupational Safety and Health Act of 1970 and any and all similar applicable state and local Laws; and (y) the Company has not been engaged in any unfair employment practice, as defined in the National Labor Relations Act or other applicable Law;

(B) since the Reference Date, the Company has not received a written notice, citation, complaint or charge asserting any violation or liability under the federal Occupational Safety and Health Act of 1970 or any similar applicable Law regulating employee health and safety;

(C) (u) none of the Current Employees is represented by any labor union or other labor representative with respect to his or her employment with the Company; (v) there are no labor, collective bargaining agreements or similar arrangements binding on the Company with respect to any Current Employees; (w) since the Reference Date, no petition has been filed nor has any proceeding been instituted by any Employee or group of Employees with the National Labor Relations Board or similar Governmental Authority seeking recognition of a collective bargaining agreement; (x) to the Company's Knowledge, there are no Persons attempting to represent or organize or purporting to represent for bargaining purposes any of the Current Employees; (y) since the Reference Date, there has not occurred or, to the Company's Knowledge, has not been threatened any strikes, slowdowns, picketing, work stoppages or concerted refusals to work or other similar labor activities with respect to Employees; and (z) no grievance or arbitration or other proceeding arising out of or under any collective bargaining agreement relating to the Company is pending or, to the Company's Knowledge, threatened;

(D) since the Reference Date, the Company has not received written notice of any charge or complaint pending before the Equal Employment Opportunity Commission or similar Governmental Authority alleging unlawful discrimination in employment practices, or before the National Labor Relations Board or similar Governmental Authority alleging any unfair labor practice, by the Company, nor, to the Knowledge of the Company, has any such charge been threatened in writing;

(E) (x) all Current Employees of the Company are employed on an at-will basis and their employment can be terminated at any time for any reason without any amounts being owed to such individual other than with respect to wages, compensation and benefits accrued before such termination; and (y) the Company's relationships with all individuals who act as Consultants to the Company can be terminated at any time for any reason without notice or any amounts being owed to such individual other than with respect to compensation or payments accrued before such termination;

(F) since the Reference Date, the Company has not effectuated: (x) a "plant closing" (as defined in the WARN Act, or any similar Law) affecting any site of employment or one or more facilities or operating units within any site of employment or facility of the Company; or (y) a "mass layoff" (as defined in the WARN Act, or any similar Law) affecting any site of employment or facility of the Company; and

(G) any individual performing services for the Company who has been classified as an independent contractor, or as an employee of some other entity whose services are leased to the Company, has been correctly classified and is in fact not a common law employee of the Company or any Subsidiary.

(i) Effect of Transaction. Except for the payment of the consideration under ARTICLE II or otherwise provided in this Agreement or under applicable Law, neither the execution and delivery of the Transaction Agreements nor the consummation of the Transactions shall result in (i) any payment becoming due to any Employee, (ii) the provision of any benefits or other rights to any Employee, (iii) the increase, acceleration or provision of any payments, benefits or other rights to any Employee, whether or not any such payment, right or benefit would constitute a

“parachute payment” within the meaning of Section 280G of the Code, (iv) require any contributions or payments to fund any obligations under any Company Plan, or (v) the forgiveness in whole or in part of any outstanding loans made by the Company to any Employee or Consultant. No payment, right or benefit that becomes due or accelerated as a result of the execution and delivery of the Transaction Agreements or the consummation of the Transactions is an “excess parachute payment” within the meaning of Section 280G of the Code.

(j) Compliance with Section 409A of the Code. To the extent that any Company Plan is a Nonqualified Deferred Compensation Plan, such Company Plan is in documentary and operational compliance with, in all respects, Section 409A of the Code and all applicable guidance issued by the IRS thereunder (or could be made compliant without applicable penalties in accordance with such guidance). No payment pursuant to any Company Plan or other arrangement to any “service provider” (as such term is defined in Section 409A of the Code and the United States Treasury Regulations and IRS guidance thereunder) to the Company would subject any person to tax pursuant to Section 409A(1) of the Code, whether pursuant to the Transactions or otherwise. There is no Contract or arrangement to which the Company, or to the Knowledge of the Company, any Company Affiliate is a party or by which it is bound to compensate any of its current or former employees, independent contractors or directors for additional income or excise taxes paid pursuant to Sections 409A or 4999 of the Code.

(k) Plans Outside the United States. No Company Plan is subject to the laws of any jurisdiction other than the United States of America.

(l) Plan Termination. Each Company Plan can be amended, terminated or otherwise discontinued in accordance with its terms, without Liability to the Company, Parent or any of their Affiliates (other than ordinary administrative expenses typically incurred in a termination event). Except as required by Law, neither the Company nor any of its Affiliates has announced its intention to modify or amend any Company Plan or adopt any arrangement or program which, once established, would come within the meaning of a Company Plan, and each asset held under any Company Plan may be liquidated or terminated without the imposition of any redemption fee, surrender charge or comparable Liability.

3.11 Environmental Matters. The Company is, and at all times has been, in compliance with all applicable Environmental Laws. There is no Action arising under Environmental Laws that is pending or, to the Knowledge of the Company, threatened in writing against the Company. The Company has not received any written notice of, or entered into, or assumed by Contract or operation of Law, any obligation, liability, order, settlement, judgment, injunction or decree arising under Environmental Laws. The Company has not stored, treated, disposed of, arranged for or permitted the disposal of, transported, handled or released any Hazardous Material in a manner that has given or would reasonably be expected to give rise to any Liabilities (including any Liabilities for response costs, corrective action costs, personal injury, natural resource damages, property damage, or any investigative, corrective or remedial obligations) pursuant to CERCLA or any other Environmental Laws. No property or facility now or, to the Knowledge of the Company, previously operated by the Company, currently is listed or proposed for listing on the National Priorities List or the Comprehensive Environmental Response, Compensation and Liability Information System,

both promulgated under CERCLA, or on any analogous state or local registry list and, to the Knowledge of the Company, no off-site location at which the Company has disposed or arranged for the disposal of any Hazardous Material is listed or proposed to be listed on the National Priorities List or on any analogous state or local list.

### 3.12 Contracts.

(a) Specified Material Contracts. Except as set forth in Section 3.12(a) of the Disclosure Schedule, the Company is not a party to, does not have any obligations, rights or benefits under, and none of its assets or properties are bound by any:

(i) Contracts that purport to limit, curtail or restrict the ability of the Company or its Affiliates to conduct business in any geographic area or line of business or restrict the Persons with whom the Company or any of its future Subsidiaries or Affiliates may do business;

(ii) Contracts: (x) with any Employee and any offer letters for employment or consulting with the Company, that (A) provide for anticipated annual compensation or other payments in excess of \$100,000 for any individual (other than employment offers terminable at will with no severance or acceleration liability), including any Contracts with individuals providing for any commission-based compensation in excess of such amount, (B) provide for the payment of non-qualified deferred compensation subject to Section 409A of the Code, or (C) provide for potential severance payments or other severance benefits; and (y) with any Consultant and any offer letters to enter into consulting agreements with the Company, that provide for anticipated annual payments in excess of \$100,000 for any individual, including any Contracts with individuals providing for any commission-based payments in excess of such amount;

(iii) Contracts with any labor union or other labor representative of Employees (including any collective bargaining agreement);

(iv) Contracts with any present or former officer, director or stockholder of the Company, or any Affiliate of such officer, director or stockholder (other than Company Plans, but specifically including any employment agreements that are not terminable at will without severance or acceleration liability), including, but not limited to, any agreement providing for furnishing of services by, rental of assets from or to, or otherwise requiring payments to, any such officer, director, stockholder or Affiliate, in each case, other than advances or reimbursements for travel and entertainment expenses consistent with Company policy and practice;

(v) Contracts under which the Company has advanced or loaned any money to any of the Employees or Affiliates of the Company where there is still an outstanding amount due to the Company under such Contract, other than advances or reimbursements for expenses consistent with Company policy and past practice (including, but not limited to, travel and entertainment);

(vi) Contracts granting any power of attorney with respect to the affairs of the Company or otherwise conferring agency or other power or authority to bind the Company other than to officers and attorneys in the Ordinary Course of Business;

- (vii) Partnership or joint venture agreements;
- (viii) Contracts for the acquisition, sale or lease of properties or assets (including any ownership interest in any entity) other than in the Ordinary Course of Business;
- (ix) Contracts with a Governmental Authority;
- (x) Loan or credit agreements, indentures, notes or other Contracts evidencing indebtedness for borrowed money (contingent or otherwise) by the Company, or any Contracts pursuant to which indebtedness for borrowed money (contingent or otherwise) is guaranteed by the Company, or any guarantees of the foregoing by third parties for the Company's benefit;
- (xi) Mortgages, pledges, security agreements, deeds of trust or other Contracts granting a Lien other than Permitted Lien on any material property or assets of the Company;
- (xii) Voting agreements or registration rights agreements relating to Company Stock to which the Company is a party;
- (xiii) Lease or rental Contracts relating to personal property;
- (xiv) Contracts providing for indemnification by the Company other than (x) customary indemnities in such Contracts that were entered into in the Ordinary Course of Business and (y) customary indemnities against infringement of Intellectual Property Rights contained in non-exclusive licenses entered into in the Ordinary Course of Business;
- (xv) Any Contract with any supplier or provider of goods or services that are incorporated into, or related to the development of, any Product and Service involving consideration in excess of \$60,000 in the current or either of the two (2) previous fiscal years (other than purchase orders for goods entered into in the Ordinary Course of Business);
- (xvi) Any Contracts to (x) provide services to any Person involving consideration in excess of \$60,000 in the current or either of the two (2) previous fiscal years, or (y) perform any service or sell or lease any product which grants the other party or any third party "most favored nation" status, "most favored customer" pricing, preferred pricing, exclusive sales, distribution, marketing or other exclusive rights, or rights of first refusal or rights of first negotiation;
- (xvii) Contracts relating to capital expenditures and involving obligations after the Agreement Date in excess of \$60,000 and not cancelable without penalty;
- (xviii) Contracts relating to the disposition or acquisition of material assets or any ownership interest in any entity
- (xvix) Contracts with any financial advisor, broker, finder or investment banker providing advisory services to the Company in connection with the Transactions; and

(xx) Contracts to enter into or negotiate the entering into of any of the foregoing.

(b) Documentation. The Company has delivered or made available to Parent (i) true and complete copies of each written Material Contract and (ii) a summary of each oral Material Contract, together with any and all amendments, supplements and “side letters” thereto.

(c) Status of Material Contracts. Each of the Contracts required to be listed in Section 3.12(a) of the Disclosure Schedule and each of the IP Contracts (collectively, the “Material Contracts”) is valid and binding on the Company and in full force and effect and is enforceable in accordance with its terms by the Company, except to the extent that their enforceability may be limited by applicable bankruptcy, insolvency, reorganization, moratorium, or similar laws affecting the enforcement of creditors’ rights generally and by general equitable principles. The Company is not in breach or default under any Material Contract, nor does any condition exist that, with notice or lapse of time or both, would constitute a breach or default in any respect thereunder by the Company or that would result in liability to the Company. To the Knowledge of the Company, (i) no other party to any Material Contract is in default thereunder and (ii) no condition exists that with notice or lapse of time or both would constitute a default in any respect by any such other party thereunder. The Company has not received notice of any termination or cancellation of any Material Contract. The Company has not and, to the Knowledge of the Company, no other party to any Material Contract has repudiated in writing any provision of any Material Contract. The Company is not disputing and, to the Knowledge of the Company, no other party to such Material Contract is disputing in writing, any provision of any Material Contract. None of the parties to any Material Contract is renegotiating any amounts paid or payable to or by the Company under such Material Contract or any other term or provision thereof.

3.13 Assets: Title, Sufficiency, Condition. The Company has good, valid and sufficient title to or sole and exclusive leasehold interest in or adequate right to use all of its tangible assets, including those that are used in the conduct of the Business or reflected in the Interim Balance Sheet as being owned by the Company or acquired after the date thereof (the “Assets”), free and clear of all Liens except Permitted Liens. The Assets constitute, in all material respects, all of the assets, properties and rights of every type and description that are used in and necessary for the conduct of the Company’s business as currently conducted. All of the tangible personal property other than the inventory (i) are in all material respects adequate and suitable for their present uses, (ii) in reasonably good working order, operating condition and state of repair (ordinary wear and tear excepted) and (iii) have been maintained in all respects in accordance with normal industry practice.

3.14 Real Property.

(a) The Company does not own or lease, and has never owned or leased, any real property.

3.15 Intellectual Property; Technology; Privacy and Security; Information Systems; Disaster Recovery.

(a) Company Intellectual Property Rights and Company Technology.

(i) The Company owns or has the right to use all Company Technology and all Intellectual Property Rights therein for all purposes necessary or useful to the Company’s business as presently conducted. Except for (x) the Technology and Intellectual Property Rights licensed to the Company under the Inbound IP Contracts and (y) off the shelf, “click wrap” or “shrink wrap” license agreements for software that is generally commercially available to the public on reasonable terms (“Shrink Wrap Licenses”), in each case with annual, aggregate payments (including license, maintenance and support fees) not in excess of \$20,000 individually or \$50,000 in the aggregate, or (z) Public Software disclosed on Section 3.15(f) of the Disclosure Schedule, none of the Company Technology or Company Intellectual Property Rights is owned by any third party. Except as noted in the preceding sentence, the Company exclusively owns all Company Technology, including Proprietary Software and all Company Intellectual Property Rights that are owned or purported to be owned by the Company free and clear of all Liens other than with respect to the Permitted Liens.

(ii) Section 3.15(a)(ii) of the Disclosure Schedule contains a list of Proprietary Software. Except as disclosed by Section 3.15(a)(ii) of the Disclosure Schedule: (A) the Company has used commercially reasonable efforts to maintain and protect all Proprietary Software (including all source code and system specifications) with appropriate proprietary notices, confidentiality and non-disclosure agreements and such other measures as are reasonably necessary to protect the Intellectual Property Rights contained therein or relating thereto, and none of the source code of any Proprietary Software has been published, disclosed or delivered to any Person by the Company (other than those subcontractors or other Persons listed on Section 3.15(a)(ii) of the Disclosure Schedule) or by any employee, consultant, contractor or agent of the Company; (B) no licenses or rights (including contingent rights) have been granted by the Company, or any of its Affiliates, to any Person to access, use or distribute any source code of any Proprietary Software; (C) the Company has complete and exclusive right, title and interest in and to all Proprietary Software except as to Public Software disclosed on Section 3.15(f) of the Disclosure Schedule that is included or made part of the Proprietary Software; (D) the Company has developed the Proprietary Software through its own efforts and for its own account without the aid or use of any consultants, agents, independent contractors or Persons (other than Persons that are Employees) who may claim ownership interests in the Proprietary Software or any portion thereof; (E) the Proprietary Software includes the current source code, system documentation, statements of principles of operation and schematics, as well as any pertinent commentary, explanation, program (including compilers), workbenches, tools and higher level (or “proprietary”) language actually created, owned or used by the Company for the development, maintenance and implementation thereof; and (F) there are no Contracts in effect with respect to the marketing, distribution or licensing of the Proprietary Software by any other Person.

(b) Infringement. Neither (i) the operation of the business of the Company, including as presently conducted, nor (ii) any of the Products and Services or Company Technology has infringed upon, diluted, misappropriated or violated, or will infringe upon, dilute, misappropriate or violate, any Intellectual Property Rights of any Person. The Company has not received any written charge, complaint, claim, demand, or notice alleging infringement, dilution, misappropriation or violation of the Intellectual Property Rights of any Person (including any demand to refrain from using or to license any Intellectual Property Rights of any Person in

connection with the conduct of the Company's business). To the Company's Knowledge, no Person has infringed upon, diluted, misappropriated or violated any Company Intellectual Property Rights at any time since the Reference Date. There are no pending or, to the Company's Knowledge, claims threatened in writing against the Company challenging the Company's ownership of the Company Intellectual Property Rights or alleging that any of the Company Intellectual Property Rights are invalid or unenforceable.

(c) Scheduled IP. Section 3.15(c) of the Disclosure Schedule identifies all patents, patent applications, registered trademarks and registered copyrights, applications for trademark and copyright registrations, domain names, registered design rights and other forms of registered Intellectual Property Rights and applications therefor owned by or exclusively licensed to the Company (collectively, the "Company Registrations"). All current Company Registrations have been duly maintained (including the payment of fees) and have not expired, cancelled or abandoned. Section 3.15(c) of the Disclosure Schedule also identifies each trade name, each unregistered trademark, service mark, or trade dress owned or exclusively licensed by the Company that, in each case, is material to the Business of the Company.

(d) IP Contracts. Section 3.15(d) of the Disclosure Schedule identifies under separate headings each Contract under which the Company uses or licenses from third parties Company Technology or Company Intellectual Property Rights that are material to the operation of the Business of the Company as presently conducted and that any Person besides the Company owns, including Software other than Proprietary Software that is licensed to or used by the Company or any of its Affiliates and is related to Company's business ("Third Party Software") (other than Shrink Wrap Licenses and Public Software) (collectively "Inbound IP Contracts") or under which the Company has granted any Person any right or interest in Company Intellectual Property Rights including any right to use or access any item of the Company Technology (the "Outbound IP Contracts", and together with the Inbound IP Contracts, the "IP Contracts"). None of the Inbound IP Contracts are subject to any transfer, assignment, change of control, site, equipment or other operational limitations. Except as provided in the Inbound IP Contracts and Shrink Wrap Licenses, the Company does not owe any royalties or other payments or otherwise have any liability to any Person for the use of any Intellectual Property Rights or Technology. The Company has paid all fees, royalties and other payments applicable to the past and current use or exploitation of Intellectual Property Rights provided for by the Inbound IP Contracts and Shrink Wrap Licenses, and no fees, royalties or other payments provided by the Inbound IP Contracts and Shrink Wrap Licenses are due or otherwise required to be paid by the Company or any of its Affiliates within thirty (30) days following the Closing Date or otherwise become due as a result of, or attributable to, the Transactions contemplated herein.

(e) Confidentiality and Invention Assignments. The Company has maintained commercially reasonable practices designed to ensure the protection of the confidentiality of the Company's confidential information and trade secrets and has required any Employee, Consultant or third party with access, or to whom it has disclosed its confidential information, to execute contracts requiring them to maintain the confidentiality of such information and use such information only in accordance with such contracts. All Employees and Consultants of the Company who (i) in the normal course of their duties are involved in the creation of any Company Technology that



is incorporated in any Product and Service of the Company or (ii) have in fact created Company Technology that is incorporated in any Product and Service of the Company, have executed contracts that irrevocably assign to the Company on a worldwide royalty-free basis all of such Persons' respective rights, including Intellectual Property Rights relating to such Product and Service. To the Knowledge of the Company, no Employee or Consultant is in violation of any term of any such agreement, including any patent disclosure agreement or other employment contract or any other contract or agreement relating to the relationship of any such Employee or Consultant with the Company. All authors of any works of authorship in the Company Technology have waived their moral rights and have agreed to a covenant not to assert their moral rights.

(f) Open Source Software. Except as disclosed on Section 3.15(f) of the Disclosure Schedule, none of the Company Technology, Proprietary Software, or any Product and Service of the Company (including any software, middleware, firmware) constitutes, contains, or is dependent upon any Public Software. Except as disclosed on Section 3.15(f) of the Disclosure Schedule, the Proprietary Software has never been provided, delivered or distributed to any Person other than those Employees and Consultants of the Company working on the development of Company's software, firmware or middleware for the benefit of the Company and has never been delivered or distributed in any form (object code, executable code or source code form) to any Person, including delivery via electronic transmission, by physical delivery on tangible media (either as stand-alone software or as a part of any other software), loan, delivery or transmission as part of the transfer of hardware or components, or any other form of delivery or distribution, temporary or permanent. None of the Company Technology, Proprietary Software, nor any Product and Service of the Company is subject to any IP Contract or other contractual obligation that would require the Company to publicly divulge any source code or trade secret that is part of the Company Technology.

(g) Privacy and Data Security.

(i) The Collection and Use and dissemination by the Company of any Personal Data is in compliance in all respects with the Company's privacy policies and terms of use, all applicable Information Privacy and Security Laws, all Personal Data Obligations, and all Contracts to which the Company is bound. Except as disclosed on Section 3.15(g) of the Disclosure Schedule, (i) no Personal Data is stored or otherwise maintained outside the United States by the Company or any third party and (ii) the Company has not engaged in cross-border processing of Personal Data. True and complete copies of all current privacy policies used by the Company have been provided or made available to Parent. The Company has consistently posted a privacy policy in a clear and conspicuous location on all websites and any mobile applications owned or operated by the Company.

(ii) The Company does not Collect or Use Personal Data from any Person in any manner other than as described in the Contracts or, to the extent applicable, any privacy policies delivered or made available to Parent.

(iii) The Company maintains policies and procedures regarding data security and privacy and maintains administrative, technical and physical safeguards that are commercially reasonable and, in any event, to the Company's Knowledge, in compliance with all applicable Information and Privacy and Security Laws and all Contracts to which the Company is

bound. True and complete copies of all such policies and procedures have been provided or made available to Parent. The Company has complied at all times in all respects with the terms of all Contracts to which the Company is a party relating to data privacy, security or breach notification (including provisions that impose conditions or restrictions on the collection, use, disclosure, transmission, destruction, maintenance, storage, or safeguarding of Personal Data).

(iv) At any time since the Reference Date, there have been no security breaches relating to, or violations of any security policy or Information Privacy and Security Law regarding, or any unauthorized access, disclosure, or use of, any data or information used by the Company, including Personal Data. No written notice has been provided to the Company by a third party vendor or any other person of any security breach relating to Personal Data. The Company has not experienced a loss or unauthorized disclosure, use, or breach of privacy or security of any Personal Data in the custody or control of the Company that would have required notice to any third Person (including any Governmental Entity or parties to any Contract) under any applicable Law. No Person (including any Governmental Authority) has commenced or, to the Company's Knowledge, threatened, any Action relating to the Company's information privacy or data security practices.

(v) The Company does not knowingly (x) have or actively solicit any customers in the European Economic Area, or (y) process, transmit, or store any Personal Data of any Persons located in the European Economic Area.

(vi) The Company has taken all required steps to limit access to Personal Data to: (x) those Company personnel and third-party vendors providing services to or on behalf of the Company who have a need to know such Personal Data in the execution of their duties to the Company; and (y) such other Persons permitted to access such Personal Data in accordance with the privacy policies and terms of use, all applicable Information Privacy and Security Laws and all Contracts to which the Company is bound.

(vii) The Company maintains a written technical information security program that contains administrative, technical and physical safeguards (including encryption) compliant in all respects with industry standards and applicable Information Privacy and Security Laws (the "Security Program"). The Company's Security Program is designed to: (v) protect the integrity and confidentiality of Personal Data; (w) protect against reasonably anticipated threats or hazards to the security of Personal Data; (x) protect against the unauthorized access, disclosure or use of Personal Data; (y) address computer and network security; and (z) provide for the secure destruction and disposal of Personal Data. The Security Program has been updated as required by all applicable Information Privacy and Security Laws. All third party vendors or persons with access to Personal Data have entered into contracts or written agreements with the Company requiring that such vendors or persons maintain a substantially similar security program.

(viii) The Company controls the access to its computer and information technology networks through the utilization of standard security measures that are designed to prevent unauthorized access to such networks. All of the Company's security measures are designed to be consistent with or exceed the requirements of applicable Laws and are designed to (x) prevent the unauthorized disclosure of confidential information (including Personal Data) of the Company,

(y) prevent access without express authorization (and immediately terminate such unauthorized access) to the networks and information system of the Company and (z) facilitate the Company's identification of the person making or attempting to make such unauthorized access.

(h) Effect of Transactions on Company Technology Rights or Data Privacy. The Transactions (including the Mergers) shall not adversely affect the Company's ownership of any Company Technology or the Company's legal right and ability to continue using the Company Technology in the operation of the Company's business in any material respect on or after the Closing to the same extent as the Company Technology is used in the operation of the business prior to the Closing. The Transactions (including any transfer of Personal Data resulting from the Transactions) (i) comply with all Personal Data Obligations of the Company, and (ii) comply (and the disclosure to and transfer to Parent of such Personal Data at the Closing, and the use by Parent of such Personal Data at and after the Closing in the same manner as such Personal Data is used by the Company prior to the Closing, will comply) with all applicable Information Privacy and Security Laws.

(i) Information Systems. The Company owns, leases or licenses all Information Systems that are used in, or necessary for, the Business of the Company. In the last twelve (12) months, to the Company's Knowledge, there have been no failures, breakdowns, outages or unavailability of such Information Systems and the DR Plans were not activated other than for testing purposes. On and after the Closing, the Information Systems shall be in the possession, custody or control of the Company, along with all tools, documentation and other materials relating thereto, as existing immediately prior to the Closing.

(j) Disaster Recovery. The Company has delivered or made available to Parent a true and complete copy of the DR Plans. To the Knowledge of the Company, the DR Plans are consistent with or exceed industry standards and applicable Laws. The DR Plans are designed to ensure, at a minimum, the ability of the Company to resume operations and performance of services promptly and ensure redundancy of all data and information material to the operation of the Company that the Company is required to maintain pursuant to any Contract, internal policy or applicable Law. Within the last twelve (12) months, the Company conducted "tabletop" testing of the DR Plans, which testing did not detect any material deficiencies in the DR Plans.

3.16 Insurance. Section 3.16 of the Disclosure Schedule sets forth a list of all policies of property, general liability, directors and officers, fiduciary, employment, title, workers' compensation, environmental, product liability, cyber liability and other forms of insurance maintained by the Company and all pending outstanding claims against such insurance policies. The Company has delivered or made available to Parent complete and correct copies of all such policies, together with all endorsements, riders and amendments thereto. There are no disputes with the insurers of any such policies or any claims pending under such policies as to which coverage has been reserved, questioned, denied or disputed by the insurers of such policies. Each such policy is in full force and effect, all premiums that are due and payable under all such policies have been paid, the Company is otherwise in compliance in all respects with the terms of such policies. The Company has not failed to give proper notice of any claim under any such policy in a valid and timely fashion. The Company has not received any notice of non-renewal, cancellation or

termination of any insurance policy in effect on the Agreement Date or at any time since the Reference Date.

3.17 Related Party/Affiliate Transactions. There are no Liabilities of the Company to any Related Party other than ordinary course, Employee- and director-related compensation and reimbursement Liabilities. Except as disclosed in Section 3.17 of the Disclosure Schedule, no Related Party (i) has any interest in any property (real, personal or mixed, tangible or intangible) used by the Company in the conduct of its business, or (ii) has been party to any Contract with the Company. All transactions pursuant to which any Related Party has purchased any services, products or Technology from, or sold or furnished any services, products or technology to, the Company have been on an arm's-length basis on terms no less favorable to the Company than would be available from an unaffiliated party.

3.18 Suppliers. Section 3.18 of the Disclosure Schedule sets forth true and complete lists of the top ten suppliers of the Company (measured in terms of total expenses) attributable to each such Person (i) during the year ended December 31, 2018, and (ii) during the six (6)-month period ended June 30, 2019 (each Person identified on at least one of such lists, a "Top Supplier"), showing the total purchases by the Company from each such Top Supplier during such period. Since the Balance Sheet Date, no Top Supplier has, to the Knowledge of the Company, threatened to cease or materially reduce such sales or provision of services, other than in the Ordinary Course of Business. No Top Supplier has pending or threatened any Action against the Company.

3.19 Certain Business Practices. Neither the Company nor any Employee or agent, acting on behalf of the Company has (i) used any Company funds for unlawful contributions, gifts, entertainment or other unlawful payments relating to political activity, (ii) made any unlawful payment to any foreign or domestic government official or employee or to any foreign or domestic political party or campaign or violated any provision of the Foreign Corrupt Practices Act of 1977, as amended, (iii) consummated any transaction, made any payment, entered into any Contract or arrangement or taken any other action in violation of Section 1128B(b) of the Social Security Act, as amended, or (iv) knowingly made any other unlawful payment of a type similar to those described above in this Section 3.19.

3.20 Brokers and Other Advisors. No broker, investment banker, financial advisor or other Person is entitled to any broker's, finder's, financial advisor's or other similar fee or commission, or the reimbursement of expenses, in connection with the Transactions or any prior merger, acquisition or divestiture transaction based upon arrangements made by or on behalf of the Company or any of its Affiliates. Notwithstanding anything in this Agreement to the contrary, there are no fees or expenses related to the Transactions payable by the Company to any third party other than the Company Transaction and Bonus Expenses.

3.21 Disclaimer of Other Warranties. Except for the representations and warranties contained in this ARTICLE III (including the Disclosure Schedule), neither the Company nor any other Person on behalf of the Company has made, or shall be deemed to have made, any other express or implied representation or warranty with respect to the Company or with respect to any other information provided or made available to Parent, Merger Sub A and Merger Sub B and any

Representatives, and the Company hereby disclaims any other representations or warranties, whether made by the Company or any of its Representatives.

## ARTICLE IV

### REPRESENTATIONS AND WARRANTIES OF PARENT

Parent represents and warrants to the Company as of the Agreement Date and as of the Closing Date as follows:

4.1 Organization. Each of Parent, Merger Sub A and Merger Sub B is a corporation duly incorporated, validly existing and in good standing under the laws of the State of Delaware. Since the date of its incorporation, neither Merger Sub A nor Merger Sub B has not engaged in any activities other than in connection with or as contemplated by this Agreement.

4.2 Authority: Non-Contravention.

(a) Each of Parent, Merger Sub A and Merger Sub B has all requisite corporate power and corporate authority to execute and deliver the Transaction Agreements to which it is a party and to perform its obligations thereunder and to consummate the Transactions (including the Mergers). The execution, delivery and performance by each of Parent, Merger Sub A and Merger Sub B of the Transaction Agreements to which it is a party and the consummation by Parent, Merger Sub A and Merger Sub B of the Transactions (including the Mergers) have been duly authorized and approved by Parent's, Merger Sub A's and Merger Sub B's respective board of directors and no other corporate action on the part of Parent, Merger Sub A and Merger Sub B, including, without limitation, by Parent's stockholders, is necessary to authorize the execution, delivery and performance by each of Parent, Merger Sub A and Merger Sub B of the Transaction Agreements to which it is a party and the consummation by it of the Transactions (including the Mergers). This Agreement has been and, when delivered at the Closing, the other Transaction Agreements to which each of Parent, Merger Sub A and Merger Sub B is a party shall be, duly executed and delivered by Parent, Merger Sub A and Merger Sub B. Assuming due authorization, execution and delivery hereof and thereof by the other parties hereto and thereto, this Agreement constitutes and the other Transaction Agreements to which each of Parent, Merger Sub A and Merger Sub B is a party shall, when delivered at the Closing, constitute, the legal, valid and binding obligations of Parent, Merger Sub A and Merger Sub B, enforceable against Parent, Merger Sub A and Merger Sub B in accordance with their respective terms, except to the extent that their enforceability may be limited by applicable bankruptcy, insolvency, reorganization, moratorium or similar laws affecting the enforcement of creditors' rights generally and by general equitable principles.

(b) Neither the execution and delivery of the Transaction Agreements to which each of Parent, Merger Sub A and Merger Sub B is a party, nor the consummation by Parent, Merger Sub A and Merger Sub B of the Transactions (including the Mergers), nor compliance by Parent, Merger Sub A and Merger Sub B with any of the terms or provisions thereof, shall (i) violate any

provision of the Charter Documents of Parent, Merger Sub A and Merger Sub B or (ii) assuming that the consents and approvals referred to in Section 4.3 are obtained and the filings referred to in Section 4.3 are made, (x) violate any Law applicable to Parent, Merger Sub A and Merger Sub B or any of their respective properties or assets, or (y) constitute a default under (with or without notice or lapse of time, or both), result in the termination of or cancellation under, or result in the creation of any Lien upon any of the respective properties or assets of Parent, Merger Sub A and Merger Sub B under, any of the terms, conditions or provisions of any material Contract to which Parent, Merger Sub A and Merger Sub B is a party, except for such violations, losses, defaults, terminations, cancellations, accelerations or Liens as, individually or in the aggregate, would not reasonably be expected to have a “Parent Material Adverse Effect.”

4.3 Governmental Approvals. No consent, approval or authorization of, or registration, qualification or filing with, any Governmental Authority is required for the valid execution, delivery and performance of this Agreement or the other Transaction Agreements by Parent, Merger Sub A and Merger Sub B or the consummation by Parent, Merger Sub A and Merger Sub B of the transactions contemplated hereby, except for (i) a filing with the New York Stock Exchange in respect of the shares of Parent Common Stock issuable pursuant to this Agreement, (ii) the filing of the Certificates of Merger with the Secretary of State of the State of Delaware pursuant to the DGCL and (iii) such consents, approvals, orders, authorizations, registrations, declarations and filings as may be required under applicable federal or state securities laws.

#### 4.4 SEC Documents.

(a) Parent has filed or furnished all reports, schedules, forms, proxy statements, prospectuses, registration statements and other documents required to be filed or furnished by it with the SEC since January 1, 2018, and Parent has made available to the Company (including through the SEC’s EDGAR database) true, correct and complete copies of all such documents (collectively, “Parent’s SEC Documents”). As of their respective dates (or, if amended or supplemented, as of the date of the most recent amendment or supplement), each of Parent’s SEC Documents complied in all material respects with the applicable requirements of the Securities Exchange Act of 1934, as amended (the “1934 Act”), the Securities Act and the Sarbanes-Oxley Act of 2002, and any rules and regulations promulgated thereunder, and none of Parent’s SEC Documents, as of their respective dates, contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements made therein, in light of the circumstances under which they were made, not misleading.

(b) Each of the consolidated financial statements (including, in each case, any notes thereto) contained in Parent’s SEC Documents was prepared in accordance with GAAP throughout the periods indicated (except as may be indicated in the notes thereto and except that financial statements included with interim reports do not contain all notes to such financial statements) and each fairly presented in all material respects the consolidated financial position, results of operations and changes in stockholders’ equity and cash flows of Parent and its consolidated subsidiaries as at the respective dates thereof and for the respective periods indicated therein (subject, in the case of unaudited statements, to normal year-end adjustments which are not expected, individually or in the aggregate, to be material).

(c) Parent is not now, and has never been, a shell issuer, as described in Rule 144(i)(1) under the Securities Act.

4.5 Shares of Common Stock. The shares of Parent Common Stock to be issued and delivered to the Consenting Holders that are Accredited Investors in accordance with this Agreement, when so issued and delivered, will be (i) duly authorized, validly issued, fully paid and nonassessable and not subject to preemptive, subscription or similar rights, and (ii) based in part upon the statements of such Consenting Holders in the Written Consent and Joinder Agreements, issued pursuant to available and valid exemptions from the registration and qualification provisions of applicable federal and state securities laws. Parent has, and shall continue to have through the Closing, sufficient authorized but unissued or treasury shares of Parent Common Stock to meet its obligations to deliver the Parent Common Stock under this Agreement.

4.6 Availability of Funds. On the Closing Date and through the Second Indemnification Hold-Back Payment Date (or such later date as all disputes are resolved if Parent exercises its Offset Right), Parent will have sufficient cash or other sources of immediately available funds to enable Parent to consummate on a timely basis the Transactions (including the Mergers) including the payment of all of its cash obligation due under this Agreement. Parent understands and acknowledges that under the terms of this Agreement, Parent's obligation to consummate the Transactions is not in any way contingent upon or otherwise subject to Parent's consummation of any financing arrangements, Parent's obtaining of any financing or the availability, grant, provision or extension of any financing to Parent.

4.7 No Reliance. Parent, Merger Sub A and Merger Sub B acknowledge and agree that except for the representations and warranties contained in ARTICLE III, neither the Company nor any other Person on behalf of the Company makes, and neither Parent, Merger Sub A nor Merger Sub B has relied upon, any other express or implied representation or warranty with respect to the Company or with respect to any other information provided to Parent, and that the Company hereby disclaims any other representations or warranties, whether made by the Company or any of its Affiliates, officers, directors, employees, agents or representatives.

## ARTICLE V

### CERTAIN AGREEMENTS OF THE PARTIES

5.1 Conduct of the Business. Except as expressly permitted by this Agreement, or with the prior written consent of Parent (not to be unreasonably withheld, conditioned or delayed), or as required by applicable Law, from the Agreement Date until the Closing or the earlier termination of this Agreement pursuant to ARTICLE VII (Termination), the Company shall (i) in all material respects conduct its business in the Ordinary Course of Business and in compliance with all applicable Laws, (ii) use commercially reasonable efforts to maintain and preserve intact its present business organization and the goodwill of those having business relationships with it (including by using commercially reasonable efforts to maintain the value of its assets and technology and preserve its relationships with Employees, suppliers, strategic partners, licensors, licensees, regulators, landlords and others having business relationships with the Company) and retain the services of its

present officers, directors and Employees and (iii) maintain in full force and effect all insurance policies described in Section 3.16. Without limiting the generality of the foregoing, until the Closing, the Company shall not:

(a) issue, sell, grant, dispose of, amend any term of, grant registration rights with respect to, pledge or otherwise encumber any shares of its capital stock or other equity interests, or any securities or rights convertible into, exchangeable or exercisable for, or evidencing the right to subscribe for any shares of its capital stock or other equity interests, or any rights, warrants, options, calls, commitments or any other agreements of any character to purchase or acquire any shares of its capital stock or other equity interests or any securities or rights convertible into, exchangeable or exercisable for, or evidencing the right to subscribe for, any shares of its capital stock or other equity interests; provided, however, that the Company may issue shares of Company Stock upon the exercise of Company Options that are outstanding on the Agreement Date and upon conversion of the Company SAFEs and Company Note, in each case in accordance with the terms thereof;

(b) other than as contemplated by the terms of this Agreement, amend (including by reducing an exercise price or extending a term) or waive any of its rights under, or accelerate the vesting under, any provision of the Company Option Plan or any agreement evidencing any outstanding stock option, warrant or other right to acquire capital stock of the Company or any restricted stock purchase agreement or any similar or related contract;

(c) redeem, purchase or otherwise acquire or cancel any of its outstanding shares of capital stock or equity interests, or any rights, warrants, options, calls, commitments or any other agreements of any character to acquire any shares of its capital stock or equity interests;

(d) declare, set aside funds for the payment of or pay any dividend on, or make any other distribution (whether in cash, stock or property) in respect of, any shares of its capital stock or other equity interests or make any payments to the Holders in their capacity as stockholders of the Company;

(e) split, combine, subdivide, reclassify or take any similar action with respect to any shares of the Company's capital stock;

(f) form any Subsidiary;

(g) incur, guarantee, issue, sell, repurchase, prepay or assume any (i) Company Debt, or issue or sell any options, warrants, calls or other rights to acquire any debt securities of the Company; (ii) obligations of the Company issued or assumed as the deferred purchase price of property; (iii) conditional sale obligations of the Company; (iv) obligations of the Company under any title retention agreement (but excluding trade accounts payable and other accrued current liabilities arising in the Ordinary Course of Business); (v) obligations of the Company for the reimbursement of any obligor on any letter of credit; or (vi) obligations of the type referred to in clauses (i) through (vi) of other Persons for the payment of which the Company is responsible or liable, directly or indirectly, as obligor, guarantor, surety or otherwise, including guarantees of such obligations;



(h) sell, transfer, lease, license, mortgage, encumber or otherwise dispose of or subject to any Lien other than a Permitted Lien (including pursuant to a sale-leaseback transaction or an asset securitization transaction), any of its properties or assets;

(i) make any capital expenditures in excess of \$75,000;

(j) acquire or agree to acquire in any manner (whether by merger or consolidation, the purchase of an equity interest in or a material portion of the assets of or otherwise) any business or any corporation, partnership, association or other business organization or division thereof other than the acquisition of inventory and equipment in the Ordinary Course of Business;

(k) make any investment (by contribution to capital, property transfers, purchase of securities or otherwise) in, or loan or advance funds to any Person (other than travel and similar advances to its Employees in the Ordinary Course of Business in an aggregate amount at any one time of not more than \$10,000);

(l) with respect to Contracts, (i) enter into, adopt, terminate, modify, renew or amend (including by accelerating material rights or benefits under) any Material Contract (or any Contract that would constitute a Material Contract if in effect on the Agreement Date) other than in the Ordinary Course of Business, (ii) enter into or extend the term or scope of any Contract that purports to restrict the Company, or any current or future Subsidiary of the Company, from engaging in any line of business or in any geographic area, (iii) enter into any Contract that could be breached by, or require the consent of any third party in order to continue in full force following, consummation of the Transactions, or (iv) release any Person from, or modify or waive any material provision of, any confidentiality or non-disclosure agreement;

(m) (i) hire or terminate any employees, except for the termination of any employee for legitimate business purposes, (ii) materially increase the annual level of compensation payable or to become payable by the Company to any of its directors or Current Employees, (iii) grant any bonus, benefit or other direct or indirect compensation to any director, Current Employee or Current Consultant, except as required by the terms of this Agreement, (iv) increase the coverage or benefits available under or otherwise modify or amend or terminate any (or create any new) Company Plan, except as required by the terms of this Agreement, applicable Law or by the terms of any Company Plan, (v) enter into any employment, deferred compensation, severance, consulting, non-competition or similar agreement to which the Company is a party (or amend any such agreement in any material respect) or enter into any agreement involving a Current Employee or Current Consultant, except, in each case, as required by the terms of this Agreement, applicable Law from time to time in effect or by the terms of any Company Plan or (vi) enter into any transactions pursuant to which any Related Party purchases any services, products or technology from, or sells or furnishes any services, products or technology to, the Company;

(n) make, change or revoke any election concerning Taxes or Tax Returns, file any amended Tax Return or any Tax Return inconsistent with past practice, enter into any closing agreement or Contract with any Taxing Authority with respect to Taxes, settle any Tax claim or assessment (other than by paying Taxes in the Ordinary Course of Business), surrender any right

to claim a refund of Taxes, request any Tax ruling or agree to an extension or waiver of the statute of limitations with respect to the assessment or determination of Taxes;

(o) make any changes in financial or tax accounting methods, principles or practices (or change an annual accounting period), except as required by applicable Law;

(p) amend the Company Charter Documents;

(q) adopt a plan or agreement for or carry out any complete or partial liquidation, dissolution, restructuring, recapitalization, merger, consolidation or other reorganization other than as required by the provisions of the Transaction Agreements;

(r) pay, repurchase, prepay, discharge, settle or satisfy any claim, liability or obligation (absolute, accrued, asserted or unasserted, contingent or otherwise) in excess of \$40,000 in any one instance or \$80,000 in the aggregate, other than the payment, discharge, settlement or satisfaction in accordance with the terms of the Liabilities reflected in the Balance Sheet;

(s) initiate, settle, agree to settle, waive or compromise any Action that results in payment by the Company in excess of \$100,000;

(t) accelerate, beyond the normal collection cycle, collection of accounts receivable or delay beyond normal payment terms payment of any accounts payable;

(u) accelerate or defer the construction of any premises;

(v) accelerate or defer the purchase of fixtures, equipment, leasehold improvements or other capital expenditures;

(w) grant or agree to grant any license to any of the Company's Intellectual Property Rights other than non-exclusive licenses granted in the Ordinary Course of Business;

(x) hire, appoint or, except as required by the terms of this Agreement, terminate any director or officer of the Company (other than a termination for cause);

(y) enter into any lease (either as lessor or lessee) or other form of use or occupancy agreement for the use or occupancy of any real property; or

(z) obligate the Company to take any of the foregoing actions.

Nothing contained in this Agreement shall give Parent, Merger Sub A or Merger Sub B, directly or indirectly, rights to control any operations of the Company prior to the Closing.

5.2 Stockholder and Other Holder Approvals. As promptly as practicable after the execution of this Agreement, the Company shall, in accordance with its Charter Documents and applicable Law, provide to the Holders an Information Statement and other appropriate documents in connection with the obtaining of written consents of the Holders in favor of the adoption of this Agreement and the approval of the Transactions (including the Mergers). The Information Statement

shall include the unanimous recommendation of the board of directors of the Company in favor of the adoption of this Agreement and the approval of the Transactions (including the Mergers). Notwithstanding anything to the contrary contained in this Agreement, the Information Statement and any other materials submitted to the Holders in connection with this Agreement and the Transactions shall be subject to prior review and reasonable approval by Parent. The Company shall use its commercially reasonable efforts to obtain (i) Written Consent and Joinder Agreements from all Holders and (ii) approval by the Requisite Stockholder Approval of the adoption of this Agreement as well as the consummation of the Transactions (including the Mergers).

### 5.3 Commercially Reasonable Efforts.

(a) Actions Required to Consummate Transactions. Subject to the terms and conditions of this Agreement, from the Agreement Date until the Closing Date or the earlier termination of this Agreement pursuant to ARTICLE VII (Termination), each of the Parties (other than the Holders' Representative) shall use (and shall cause its Affiliates to use) commercially reasonable efforts to promptly (i) take, or cause to be taken, all actions and do, or cause to be done, all things necessary, proper or advisable to cause the conditions to closing of the other Parties hereunder to be satisfied and to consummate and make effective the Transactions (including the Mergers), in each case, as expeditiously as practicable, and (ii) obtain all approvals, consents, registrations, Permits, authorizations and other confirmations from any Governmental Authority or third party necessary, proper or advisable to consummate the Transactions (including the Mergers).

(b) Governmental Authorities. Each of the Parties, in the case of the Holders' Representative, after Closing, shall use its commercially reasonable efforts to (i) cooperate with each other in connection with any investigation or other inquiry by or before a Governmental Authority relating to the Transactions (including the Mergers), including any proceeding initiated by a private party and (ii) keep the other Parties informed in all material respects and on a reasonably timely basis of any material communication received by such Party from, or given by such Party to, any Governmental Authority and of any material communication received or given in connection with any proceeding by a private party, in each case regarding any of the Transactions. In furtherance and not in limitation of the covenants of the Parties contained in this Section 5.3(b), each of the Parties in the case of the Holders' Representative, after Closing, shall use its commercially reasonable efforts to resolve such objections, if any, as may be asserted by a Governmental Authority or other Person with respect to the Transactions (including the Mergers).

5.4 Public Announcements. Parent, the Company and the Holders' Representative (if after the Closing) shall reasonably cooperate in order to prepare and publish a press release concerning the Transactions upon or promptly following the Closing. No Party hereto shall, and shall not permit its Affiliates or Representatives to, make any public announcement or disclosure in respect of this Agreement or the transactions contemplated hereby or otherwise communicate with any news media with respect to this Agreement or the transactions contemplated hereby without the prior written consent of the other Parties (which consent shall not be unreasonably withheld or delayed); provided, that, in each case, any party to this Agreement shall be permitted to disclose the terms of this Agreement (including the Base Purchase Price or the Final Purchase Price) (i) to its Affiliates and its and their respective managers, partners, stockholders, equityholders, attorneys,

accountants, tax advisors, financial advisors, consultants, agents, employees, potential financing sources or investors or other representatives, and, in the case of the Holders' Representative, to the Holders, (so long as such Person is obligated and directed to maintain the confidentiality of such information), (ii) as required (upon advice of legal counsel) by applicable Law, the rules or regulations of any United States or foreign securities exchange, in which case the Party required to make such release, filing, announcement, or disclosure shall provide the other Party (if legally permissible) with advance written notice of, and an opportunity to review, discuss, and comment on, such proposed release, filing, announcement, or disclosure, and (iii) and such other information previously made public in accordance with this Section 5.4 in a press release or other document; provided further, with respect to any Holder that is a venture capital or private equity fund or accelerator, such Holder may make such non-confidential disclosures after the Closing that are in the ordinary course of its business consistent with past practices. Notwithstanding anything in this Agreement to the contrary, after Closing and the public announcement of the Mergers, the Holders' Representative shall be permitted to publicly announce that it has been engaged to serve as the Holders' Representative in connection with the Mergers as long as such announcement does not disclose any of the other terms of the Mergers or the other transactions contemplated herein.

5.5 Access to Information. Subject to the requirements of applicable Law, the Company shall afford to Parent and Parent's Representatives, from time to time prior to the earlier of (i) the Closing or (ii) the termination of the Agreement pursuant to Section 7.1, access during normal business hours upon reasonable advance notice to (x) all of the Company's books, reports, Contracts, assets, filings with and applications to Governmental Authorities, records and correspondence (in each case, whether in physical or electronic form) and (y) to the Representatives of the Company as Parent may reasonably request and the Company shall furnish promptly to Parent all information and documents concerning its business, financial condition and operations, properties and personnel related to the consummation of the Transactions or the ownership or operation of the Company's business as Parent may reasonably request and Parent shall be allowed to make copies of such information and documents.

5.6 Confidentiality. Holders' Representative, on behalf of the Holders, acknowledges that the success of the Company after the Closing Date depends upon the preservation of the confidentiality of the Confidential Information (as hereinafter defined), that the preservation of the confidentiality of the Confidential Information is an essential premise of the bargain between the Parties and Parent would be unwilling to enter into this Agreement in the absence of this Section 5.6. Accordingly, Holders' Representative, on behalf of the Holders, shall, and shall use its commercially reasonable efforts to cause its Affiliates and its Representatives to, keep confidential all confidential documents and information involving or relating to the Company or its business (the "Confidential Information"), unless (i) compelled to disclose such Confidential Information by Law so long as, to the extent permitted by Law, reasonable prior notice of such disclosure is given to Parent and the Company and a reasonable opportunity is afforded Parent and the Company to contest the same or (ii) disclosed in an Action brought by a Party in pursuit of its rights or in the exercise of its remedies hereunder; provided, that, in each case, any party to this Agreement shall be permitted to disclose the terms of this Agreement (including the Base Purchase Price or the Final Purchase Price) to its Affiliates and its and their respective managers, partners, stockholders, equityholders, attorneys, accountants, tax advisors, financial advisors, consultants, agents,

employees, potential financing sources or investors or other representatives, and, in the case of the Holders' Representative, to the Holders, (so long as such Person is obligated and directed to maintain the confidentiality of such information). "Confidential Information" does not include any document or information which is as of the Closing Date or becomes following the Closing Date generally available to the public other than as a result of a disclosure in violation of this Section 5.6 by the receiving party or its Representatives. The provisions of this Section 5.6 shall survive three (3) years after the completion of the Holders' Representative's responsibilities hereunder.

5.7 Notification of Certain Matters. The Company shall provide prompt written notice to Parent and Parent shall provide prompt written notice to the Company upon the respective Party's Knowledge (i) that any representation or warranty made by such Party in this Agreement was untrue when made or subsequently has become untrue, (ii) of any failure by such Party to comply with or satisfy any of its covenants or agreements hereunder, (iii) of the occurrence or nonoccurrence of any event that could reasonably be expected to cause any condition precedent to any obligation of any other Party to consummate the Transactions (including the Mergers) not to be satisfied at or prior to the Closing Date, (iv) of any written notice or other communication from any Person alleging that the consent of such Person is or may be required in connection with the Transactions (including the Mergers), to the extent such consent is not already contemplated by this Agreement or the Disclosure Schedule, (v) of any written notice or other communication from any Governmental Authority in connection with the Transactions (including the Mergers), (vi) of the commencement or threat of commencement of any Action regarding the Transactions (including the Mergers) or otherwise relating to such Party, or (vii) of any other material and detrimental development affecting the assets, Liabilities, business, financial condition or operations of such Party; provided, however, that neither the delivery of any notice pursuant to this Section 5.7 nor obtaining any information or knowledge in any investigation pursuant to Section 5.5 or otherwise shall (x) cure any breach of, or non-compliance with, any representation or warranty requiring disclosure of such matter, or any breach of any other provision of this Agreement, (y) amend or supplement any scheduled disclosure made by the Company in ARTICLE III or (z) limit the remedies available to the Party receiving, or entitled to receive, such notice.

#### 5.8 Tax Matters.

(a) Company Prepared Tax Returns. The Company shall, at the Company's expense, prepare or cause to be prepared and file or cause to be filed all Tax Returns for the Company for all taxable periods ending on or before the Closing Date and which are due on or before the Closing Date and to pay or cause to be paid all Taxes shown as due on such Tax Returns. All Tax Returns referred to in the first sentence of this Section 5.8(a) shall be prepared in accordance with the past practices of the Company, to the extent permitted by applicable Law, and shall be subject to Section 5.1(n) if applicable. The Company shall submit any such Tax Return for Parent's review and comment a reasonable period of time prior to filing. The Company shall consider in good faith any changes to such Tax Return that are reasonably requested by Parent, and Parent shall reasonably assist in causing any such Tax Return to be timely filed, as necessary.

(b) Parent Prepared Tax Returns. Parent shall prepare or cause to be prepared and file or cause to be filed all Tax Returns of the Company (x) for taxable periods that end after

the Closing Date, including all Tax Returns for all complete taxable periods including but not ending on the Closing Date (collectively, the “Straddle Periods”), and (y) for taxable periods ending on or before the Closing Date and which are due after the Closing Date. All Tax Returns referred to in the first sentence of this Section 5.8(b) shall, to the extent relating to the Pre-Closing Tax Period, be prepared in accordance with the past practices of the Company, to the extent permitted by applicable Law. Parent shall cause the Company to pay all Taxes shown as due on such Tax Returns. Parent shall permit Holders’ Representative to review and comment on each Tax Return for a Straddle Period or that is described in clause (y) of the first sentence of this Section 5.8(b) at least fifteen (15) days before such Tax Return is required to be filed. Parent shall consider in good faith any changes to such Tax Returns that are reasonably requested by Holders’ Representative with respect to Taxes for which the Holders would bear liability pursuant to this Agreement.

(c) Tax Contests.

(i) After the Closing, each of Parent, on the one hand, and Holders’ Representative, on the other hand, shall promptly notify the other Party in writing upon receipt from a Taxing Authority of any written notice of any pending or threatened audit, examination, claim, dispute or controversy relating to Taxes (a “Tax Claim”) with respect to the Company for a Pre-Closing Tax Period or any Losses for which such other Party (or any of its Affiliates) could be liable pursuant to this Agreement; provided, however, the failure to give such notice shall not affect the indemnification provided hereunder except to the extent the Indemnifying Party has been prejudiced as a result of such failure.

(ii) With respect to any Tax Claim relating to Taxes or Tax Returns within the scope of Section 5.8(a) or Section 5.8(b)(y), the Holders may elect, through Holders’ Representative, solely at the Holders’ own cost and expense, to control all proceedings in connection with such Tax Claim (including selection of counsel); provided, however, that (x) Holders’ Representative (on behalf of the Holders) shall keep Parent informed of all material developments regarding such Tax Claim and shall not settle such Tax Claim without the written consent of Parent, which consent shall not be unreasonably withheld, conditioned or delayed, and (y) Parent and its counsel (at Parent’s expense) may participate in (but not control the conduct of) the defense of such Tax Claim.

(iii) With respect to any Tax Claim relating to Taxes or Tax Returns within the scope of Section 5.8(b)(x), or within the scope of Section 5.8(a) or Section 5.8(b)(y) which Holders’ Representative does not elect to control pursuant to Section 5.8(c)(ii), Parent shall, solely at Parent’s own cost and expense, control all proceedings in connection with such Tax Claim (including selection of counsel); provided, however, that to the extent that any such Tax Claim could reasonably be expected to result in the Holders being liable for any amounts hereunder, (x) Parent shall keep Holders’ Representative informed of all material developments regarding such Tax Claim, (y) Holders’ Representative and its counsel (at the Holders’ expense) may participate in (but not control the conduct of) the defense of such Tax Claim, and (z) Parent shall not settle such Tax Claim without the written consent of Holders’ Representative, which consent shall not be unreasonably withheld, conditioned or delayed.

(iv) Any dispute, controversy or claim between Parent and Holders' Representative with respect to the defense of any Tax Claim, as described in this Section 5.8(c), shall be resolved pursuant to Section 5.8(i).

(v) In the event of any conflict between the provisions of this Section 5.8(c), and the provisions of Section 8.4(a), the provisions of this Section 5.8(c), shall control.

(d) Certification. Parent and Holders' Representative agree, upon request from the other Party, to use their commercially reasonable efforts to obtain any certificate or other document from any Taxing Authority or any other Person as may be necessary to mitigate, reduce or eliminate any Tax that could be imposed (including, but not limited to, with respect to the contemplated Transactions).

(e) Tax Sharing Agreements. The Company shall terminate all Tax Sharing Agreements with respect to the Company as of the Closing Date and shall ensure that such agreements are of no further force or effect on and after the Closing Date and that there shall be no further liabilities or obligations imposed on any of the Company under any such agreements.

(f) Cooperation. Following the Closing Date, Parent and Holders' Representative shall, as reasonably requested by any Party: (i) assist any other Party in preparing and filing any Tax Returns relating to the Company that such other Party is responsible for preparing and filing; (ii) cooperate in preparing for any Tax audit of, or dispute with any Taxing Authority regarding and any judicial or administrative proceeding relating to, liability for Taxes, in the preparation or conduct of litigation or investigation of claims and in connection with the preparation of financial statements or other documents to be filed with any Taxing Authority, in each case with respect to the Company; (iii) make available to the other Parties and to any Taxing Authority as reasonably requested all information, records and documents in its possession relating to Taxes relating to the Company (at the cost and expense of the requesting Party); (iv) provide timely notice to the other Parties in writing of any pending or threatened Tax audits or assessments relating to the Company for taxable periods for which any such other Party is responsible; and (v) furnish the other Parties with copies of all correspondence received from any Taxing Authority in connection with any Tax audit or information request with respect to any taxable periods (or portion thereof) for which any such other Party is responsible. For the avoidance of doubt, the cooperation noted in this Section 5.8(f) shall include signing any Tax Returns, amended Tax Returns, claims or other documents with respect to any audit, litigation or other proceedings with respect to Taxes, the retention and (upon the other Party's reasonable request) the provision of records and information which are reasonably relevant to any such audit, litigation or other proceeding and making employees available on a mutually convenient basis to provide additional information and explanation of any material provided hereunder.

(g) Amended Tax Returns and Tax Elections.

(i) Parent shall not cause or permit the Company or any Affiliate of Parent to file inconsistently with past practice or amend any Tax Return of or with respect to the Company that relates to Taxes that are subject to indemnification by the Holders and shall not file any Tax election with respect to the Company with effect to any Pre-Closing Tax Period (including

any election under Section 338 or 336 of the Code) hereunder without the prior written consent of Holders' Representative (which consent shall not be unreasonably withheld, conditioned or delayed); provided, however, that no such consent shall be required for the filing of any Tax Return or an amendment of any Tax Return of the Company that is required by applicable Tax Law.

(ii) Parent shall not cause or permit Merger Sub B to make any election to be taxable as an association under Treasury Regulations Section 301.7701-3 effective on or prior to the Closing Date.

(h) Transfer Taxes. All real property transfer or gains tax, stamp tax, stock transfer tax, or other similar Tax imposed as a result of or in connection with the Transactions (collectively, the "Transfer Taxes"), and any penalties or interest with respect to the Transfer Taxes, shall be borne fifty percent (50%) by the Holders and fifty percent (50%) by Parent. Each Party, at its own expense, shall file all Tax Returns and other documentation required to be filed by it with respect to all such Transfer Taxes, and, if required by applicable Law, each other Party shall cooperate in filing all necessary Tax Returns and other documentation with respect to the Transfer Taxes.

(i) Dispute Resolution for Taxes. With respect to any dispute, controversy or claim relating to Taxes between Parent and the Holders (for any Tax for which an indemnity claim may exist under this Agreement), Parent and the Holders shall cooperate in good faith to resolve such dispute, controversy or claim between them for a period of thirty (30) days from the date written notice of such dispute, controversy or claim is received by Parent or Holders' Representative, as the case may be; but if the applicable Parties are unable to resolve such dispute, controversy or claim, the Parties shall submit the dispute, controversy or claim for resolution, which resolution shall be final, conclusive and binding on the Parties, to a mutually agreed upon national accounting firm or a mutually agreed upon tax lawyer who is a partner in a law firm, that, in each case, is: (i) familiar with transactions or operations of the sort at issue; and (ii) independent with respect to each Party. Notwithstanding anything in this Agreement to the contrary, the fees and expenses of the mutually agreed upon firm or person, as described in the preceding sentence, relating to any dispute as to the amount of Taxes owed shall be paid by Parent, on the one hand, and the Holders, on the other hand, in proportion to each Party's respective liability for the portion of Taxes in dispute, as determined by such mutually agreed upon firm or person.

(j) Tax Treatment.

(i) Parent, Merger Sub A, Merger Sub B and the Company shall use their respective commercially reasonable efforts to cause the Mergers, considered together as a single integrated transaction for U.S. federal income Tax purposes, to qualify, and agree not to, and shall not permit or cause any Affiliate or any Subsidiary to, take any actions or cause any action to be taken which would reasonably be expected to prevent the Mergers, considered together as a single integrated transaction for U.S. federal income Tax purposes, from qualifying, as a "reorganization" under Section 368(a) of the Code, in accordance with Revenue Ruling 2001-46, 2001-2 C.B. 321.

(ii) If requested by Sullivan & Worcester LLP, the Company and Parent shall each use its commercially reasonable efforts to deliver to Sullivan & Worcester LLP an officer's certificate, dated as of the Closing Date and signed by an officer of the Company or Parent, as



applicable, containing customary representations to enable Sullivan & Worcester LLP to render an opinion to the effect that the Mergers, considered together as a single integrated transaction for U.S. federal income Tax purposes, will qualify as a reorganization within the meaning of Section 368(a) of the Code.

(k) Plan of Reorganization. This Agreement is intended to constitute, and the parties hereto hereby adopt this Agreement as, a “plan of reorganization” within the meaning Treasury Regulation Sections 1.368-2(g) and 1.368-3(a). Parent, Merger Sub A, Merger Sub B and the Company shall treat the Mergers, and shall not take any tax reporting position inconsistent with the treatment of the Mergers, considered together as a single integrated transaction for U.S. federal income Tax purposes, as a reorganization within the meaning of Section 368(a) of the Code, in accordance with Revenue Ruling 2001-46, 2001-2 C.B. 321, for U.S. federal, state and other relevant Tax purposes, unless otherwise required pursuant to a “determination” within the meaning of Section 1313(a) of the Code.

5.9 Employment Related Agreements. As promptly as practicable after the Agreement Date, the Company shall use commercially reasonable efforts to cause each Current Employee identified on Exhibit D hereto (the “Continuing Employees”) to execute and deliver to Parent an offer letter and, to the extent indicated on Exhibit D hereto, a non-competition agreement, in each case substantially in the form(s) attached hereto as Exhibit E, which agreement shall become binding and effective as of the Closing Date (collectively, the “Employment Documents”).

5.10 Employee Matters and Company Plans.

(a) Continuing Employees.

(i) The Current Employees shall continue to receive full credit for service with the Company to the extent required by applicable Law. Effective as of the Closing and thereafter, Parent shall, and shall cause the Company to, use commercially reasonable efforts to (i) cause any pre-existing condition limitations, eligibility waiting periods or evidence of insurability requirements under any health plan of the Company, Parent or an Affiliate of Parent extended to the Current Employees after the Closing to be waived with respect to the Current Employees and their eligible dependents to the extent such limitations or requirements had been satisfied or do not apply under an analogous compensation and benefit plan in which such Current Employees participated immediately prior to the Closing, and (ii) fully credit for purposes of eligibility and vesting for years of service with the Company prior to the Closing to the extent that such service was recognized under the corresponding Company Plan prior to the Closing for the Current Employee’s participation in any welfare benefit plan or pension plan (intended to qualify under Section 401(a) of the Code) of Parent (each a “Parent Plan”). For the avoidance of doubt, no incentive compensation, bonus or similar plan shall constitute a Parent Plan for the purpose of subclause (ii) of this Section 5.10(a)(i).

(i) Following the date of this Agreement, the Parties agree to reasonably cooperate in all matters reasonably necessary to effect the actions contemplated by this Section 5.10, including furnishing each other with information concerning the Current Employees, applicable compensation and benefit plans, and workers compensation, in obtaining any

governmental approvals required hereunder and in addressing inquiries from the Current Employees.

(b) Company Plans. The Company shall cease contributions to and terminate all of the Company Plans effective immediately prior to Closing (one day prior to Closing in the case of any Company Plan intended to qualify under Section 401(a) of the Code). Any such cessation or termination shall be undertaken (i) in accordance with the governing documents and Contracts for the Company Plans (including through plan amendment) and (ii) in conformance with applicable Laws.

(c) No Limitation. This Section 5.10 is not intended to amend any benefit plans or arrangements of Parent or any of its Subsidiaries, to limit the ability of Parent or any of its Subsidiaries to amend, modify or terminate any of such benefit plans or arrangements or to confer third-party beneficiary rights on any Person (including any Current Employee or any beneficiary or dependent thereof).

5.11 No Negotiations, Etc. The Company shall not, shall cause its Representatives not to, and shall advise the Holders and their respective Representatives (other than the Holders' Representative) not to, directly or indirectly solicit, initiate, or enter into any discussions or negotiations or continue in any way any discussions or negotiations with any Person or group of Persons regarding any Competing Transaction. The Company shall promptly but not later than forty-eight (48) hours following the occurrence of the relevant event notify Parent orally and in writing if any inquiries, proposals, or requests for information concerning a Competing Transaction are received in writing by the Company, the Holders or any of their respective Representatives (other than the Holders' Representative). The written notice shall include the identity of the Person making such inquiry, proposal, or request and the material terms and conditions thereof as well as a copy of such inquiry proposal or request. For purposes of this Agreement, "Competing Transaction" means a transaction or a series of related transactions (other than the Transactions) involving (i) any sale of stock or other equity interests in the Company, (ii) a merger, consolidation, share exchange, business combination, or other similar transaction involving the Company, (iii) any sale, lease, exchange, license (other than in the Ordinary Course of Business), mortgage, pledge, transfer, or other disposition of the assets of the Company (other than disposition of inventory in the Ordinary Course of Business), or (iv) any other transaction or series of transactions which could reasonably preclude the consummation of the Transactions.

5.12 Termination of the Company Option Plan . The Company shall take (or cause to be taken) all actions necessary or appropriate to terminate, effective immediately after the Closing, the Company Option Plan (as well as all Company Options).

5.13 Registration of Shares. Parent agrees to register for public resale the Stock Consideration Shares on a Form S-3ASR (assuming Parent remains eligible for the use of such form, otherwise on a Form S-3) pursuant to the registration rights agreement substantially in the form attached hereto as Exhibit F (the "Registration Rights Agreement"). Notwithstanding anything herein to the contrary, following registration of the Stock Consideration Shares, each Consenting Holder that is an Accredited Investor, by virtue of approving the Mergers and the execution of a Written Consent and Joinder Agreement, shall agree to not to sell any shares of Parent Common

Stock issued to such Consenting Holder on a particular day, if the sale of such shares would, when combined with the sale of any other shares of Parent Common Stock by such Consenting Holder on such one (1)-day period, exceed five percent (5%) of the average daily trading volume of Parent Common Stock on the New York Stock Exchange over the five (5) trading days preceding such date of sale; provided, however, that if the aggregate number of Stock Consideration Shares represents less than fifty percent (50%) of the average daily trading volume of Parent Common Stock on the New York Stock Exchange over the five (5) trading days preceding the Closing, such resale volume limitations shall not apply.

5.14 Absence of Certain Changes. From the Agreement date to the Closing, except as consented to in writing by the Company (which consent shall not be unreasonably withheld, conditioned or delayed), Parent shall not (i) amend or restate its Charter Documents in a manner that would have a disproportionate adverse effect on the Consenting Holders that are Accredited Investors as compared to other holders of Parent Common Stock or (ii) enter into or adopt a plan of complete or partial liquidation or dilution.

5.15 New York Stock Exchange Listing. Prior to the Closing, Parent shall prepare and file with the New York Stock Exchange a supplemental listing application with respect to the Stock Consideration Shares and shall use its reasonable best efforts to obtain, as promptly as practicable following the Closing, approval of the listing of the Stock Consideration Shares, subject only to official notice to the New York Stock Exchange of issuance.

5.16 Director and Officer Indemnification and Insurance.

(a) Parent agrees that all rights to indemnification, advancement of expenses, and exculpation by the Company existing as of the date hereof in favor of each Person who is now, or has been at any time prior to the Closing Date, an officer, director or employee of the Company (the “Company Indemnified Persons”), as provided in the Company Charter Documents, in each case as in effect as of the date hereof, or pursuant to any other agreements in effect as of the date hereof and disclosed in Schedule 5.16(a), shall survive the Closing, and shall continue in full force and effect in accordance with their respective terms, for a period of six (6) years after the Closing Date. The Company shall comply with, and shall provide the Company Indemnified Persons with all rights and protections provided in, the Company Charter Documents, in each case as in effect as of the date hereof, or pursuant to any agreements disclosed in Schedule 5.16(a) notwithstanding any subsequent modification, amendment, or termination of any such Company Charter Documents or agreements, and Parent shall cause the Company to comply with the provisions of this sentence.

(b) Parent acknowledges that, prior to the Closing, the Company shall purchase a policy of directors’ and officers’ liability insurance (the “D&O Tail Policy”) which is intended to be in effect for a period of six (6) years after the Closing Date. The Company agrees to purchase the D&O Tail Policy and Parent agrees that it will take no action, except as contemplated by this Agreement, with respect to the Company and its maintenance of the D&O Tail Policy for such six (6) year period. The insurance premium for the D&O Tail Policy shall be borne equally between Parent and the Company and settled through the Company Transaction and Bonus Expenses;

provided, however, that the Company shall bear (through the Company Transaction and Bonus Expenses) 100% of the obligation to pay any premium amount in excess of \$8,000.

(c) The obligations of Parent and the Company under this Section 5.16 shall not be terminated or modified in such a manner as to adversely affect any Company Indemnified Person to whom this Section 5.16 applies without the consent of such affected Company Indemnified Person (it being expressly agreed that the Company Indemnified Persons to whom this Section 5.16 applies shall be third-party beneficiaries of this Section 5.16, each of whom may enforce the provisions of this Section 5.16).

(d) In the event that Parent or the Company or their respective successors or assigns (i) consolidates with or merges into any other Person and shall not be the continuing or surviving corporation or entity in such consolidation or merger or (ii) transfers all or substantially all of its properties and assets to any Person, then, and in either such case, proper provision shall be made so that the successors and assigns of such Person (as applicable) shall assume all of the obligations of such Person set forth in this Section 5.16 as part of, or as a condition to, such Transaction.

## ARTICLE VI

### CONDITIONS TO CLOSING

6.1 Conditions to Obligations of Parent, Merger Sub A and Merger Sub B. The obligations of Parent, Merger Sub A and Merger Sub B to effect the Transactions (including the Mergers) are subject to the satisfaction (or full or partial waiver by Parent) at or prior to the Closing of the following conditions:

(a) Representations and Warranties. Each of the representations and warranties of the Company contained in ARTICLE III that is qualified by “materiality”, “Company Material Adverse Effect” or a similar qualifier shall be true and correct in all respects, and each of such representations and warranties that is not so qualified shall be true and correct in all material respects, in each case, at and as of the Closing Date, except for representations and warranties made as a of a specified date, the accuracy of which will be determined only as of the specified date; provided, however, that the Company Fundamental Representations shall be true and correct in all respects at and as of the Closing Date.

(b) Performance of Obligations of Company. The Company shall have performed in all material respects all covenants, agreements and obligations required to be performed by it under this Agreement at or prior to the Closing.

(c) No Litigation. No Action shall have been instituted, commenced or threatened and no Action shall remain pending that seeks to or could reasonably be expected to (i) restrain, prevent, enjoin, prohibit or make illegal the Transactions, (ii) cause any of the Transactions to be rescinded following the Closing Date, (iii) impose limitations on the ability of the Surviving

Company to conduct its business following the Closing Date or (iv) compel Parent or the Company to dispose of any portion of the Company's business or assets; provided, however, [\*].

(d) No Material Adverse Effect. Since the Agreement Date, no Company Material Adverse Effect shall have occurred.

(e) No Injunctions or Restraints. No Order shall be in effect (i) enjoining, restraining, preventing or prohibiting consummation of the Transactions, (ii) causing any of the Transactions to be rescinded following the Closing Date, (iii) imposing limitations on the ability of the Company to effectively conduct its business following the Closing Date or (iv) compelling Parent or the Company to dispose of any portion of the Company's business or assets.

(f) Governmental Consents. All filings with and consents of any Governmental Authority required to be made or obtained to consummate the Transactions shall have been made or obtained and shall be in full force and effect and any waiting period under any applicable antitrust or competition law, regulation or other Law shall have expired or been terminated.

(g) Delivery of Closing Certificates. Parent shall have received:

(i) Closing Certificate. A certificate dated as of the Closing Date, signed by the Chief Executive Officer or the Chief Financial Officer of the Company certifying that the conditions precedent set forth in Section 6.1(a), Section 6.1(b), Section 6.1(c), Section 6.1(d), Section 6.1(e) and Section 6.1(f) have been met;

(ii) Allocation Schedule Certificate. A certificate dated as of the Closing Date, signed by the Chief Executive Officer or the Chief Financial Officer of the Company certifying that the Allocation Schedule before giving effect to any adjustment required by the definition of Merger Consideration Share Price is true and correct in all respects;

(iii) Good Standing Certificates. Certificates of good standing with respect to the Company issued by the Company's jurisdiction of organization and the jurisdiction of the Company's principal place of business, dated not more than five (5) Business Days prior to the Closing Date; and

(iv) FIRPTA Certificate. A certificate dated as of the Closing Date, signed by the Chief Executive Officer or Chief Financial Officer of the Company conforming to the requirements of Treasury Regulation Sections 1.897-2(h) and 1.1445-2(c) (3).

(v) Certificate of Reverse Merger. The Certificate of Reverse Merger duly executed by the Company.

(h) Employment Documentation. The Employment Documents described in Section 5.9 shall have been executed and delivered to Parent at or prior to Closing and no such Employment Document shall have been amended, terminated, cancelled or repudiated.

(i) Resignation of Officers and Directors. Parent shall have received resignations, in form and substance reasonably satisfactory to Parent, effective as of the Closing,

from each officer and director of the Company, other than those continuing officers and directors specified to the Company by Parent in writing at least two (2) Business Days prior to the Closing Date.

(j) [RESERVED.]

(k) Transaction Expenses. Parent shall have received written statements from the Company's outside legal counsel and any financial advisor, accountant or other Person who provided services to the Company (other than Employees who provided such services only in their capacities as such), or who is otherwise entitled to any compensation from the Company, in connection with services provided with respect to this Agreement or any of the Transactions, setting forth the total amount of unpaid Company Transaction and Bonus Expenses that remain payable to such Person with respect to services rendered through the Closing Date.

(l) Third Party Notices. The Company shall have delivered to Parent copies of notices provided to the third Persons specified or referenced in Exhibit G attached hereto with respect to the consummation of the Transactions contemplated by this Agreement in a form that is reasonably acceptable to Parent.

(m) 280G Stockholder Approval or Disapproval. With respect to any payments and/or benefits that may constitute "parachute payments" under Section 280G of the Code with respect to any Employees (including, without limitation, any acceleration of vesting relating to unvested Company Stock or Company Options as set forth on Section 6.1(m) of the Disclosure Schedule), either (i) the Company shall have submitted such parachute payments to the Company Stockholders for approval and the Company Stockholders shall have (x) approved, pursuant to the method provided for in the regulations promulgated under Section 280G of the Code, any such "parachute payments" or (y) shall have voted upon and disapproved such "parachute payments," and, as a consequence, such "parachute payments" shall not be paid or provided for in accordance with applicable Law, or (ii) the applicable Employee(s) shall have made arrangements satisfactory to Parent in order for Parent and/or the Company to effect any applicable Tax withholding obligation.

(n) Exchange Agreement. The Exchange Agreement shall have been executed and delivered by the Exchange Agent to Parent at or prior to the Effective Time and shall not have been amended, terminated, cancelled or repudiated.

(o) Stockholder Approval; Written Consent and Joinder Agreements. The adoption of this Agreement as well as the consummation of the Transactions (including the Mergers) shall have been duly approved by the Requisite Stockholder Approval, and the Company shall have delivered to Parent Written Consent and Joinder Agreements duly executed by all Holders of the Company Stock (including any Company Stock issuable as result of the SAFE Conversion and the Note Conversion).

(p) No Company Options or Plans. The Company shall have provided Parent with evidence reasonably satisfactory to Parent as to the termination of (i) the Company Option Plan, (ii) all outstanding Company Options and (iii) all Company Plans.

(q) Registration Rights Agreement. The Registration Rights Agreement shall have been executed and delivered by each Consenting Holder that is an Accredited Investor to Parent.

(r) Mornetware Reseller Agreement. Section 5.1 of that certain SaaS Reseller Agreement, dated as of December 1, 2016, by and between Mornetware Ltd. and the Company shall have been amended prior to the Closing to provide for the Company's right to terminate such SaaS Reseller Agreement for convenience upon thirty (30) days' notice, and the Company shall have provided Parent a duly executed copy of such amendment.

6.2 Conditions to Obligation of the Company. The obligation of the Company to effect the Transactions is subject to the satisfaction (or waiver, if permissible under applicable Law) prior to the Closing of the following conditions:

(a) Representations and Warranties. Each of the representations and warranties of Parent contained in ARTICLE IV that is qualified by "materiality", "Parent Material Adverse Effect" or a similar qualifier shall be true and correct in all respects, and each of such representations and warranties that is not so qualified shall be true and correct in all material respects, in each case, at and as of the Closing Date, except for representations and warranties made as a of a specified date, the accuracy of which will be determined only as of the specified date.

(b) Performance of Obligations of Parent. Parent shall have performed in all material respects all covenants, agreements and obligations required to be performed by Parent under this Agreement prior to the Closing.

(c) Delivery of Closing Certificate. The Company shall have received a certificate dated as of the Closing Date signed by the Chief Executive Officer, the Chief Financial Officer or the General Counsel of Parent and the certifying that the conditions precedent set forth in Section 6.1(a) and Section 6.1(b) have been met.

(d) Governmental Consents. All filings with and consents of any Governmental Authority required to be made or obtained to consummate the Transactions shall have been made or obtained and shall be in full force and effect and any waiting period under any applicable antitrust or competition law, regulation or other Law shall have expired or been terminated.

(e) No Injunctions or Restraints. No Order shall be in effect (i) enjoining, restraining, preventing or prohibiting consummation of the Transactions, (ii) causing any of the Transactions to be rescinded following the Closing Date, (iii) imposing limitations on the ability of Parent to effectively conduct its business following the Closing Date or (iv) compelling Parent or the Company to dispose of any portion of the Company's business or assets.

(f) Registration Rights Agreement. The Registration Rights Agreement shall have been executed and delivered by Parent to each Consenting Holder that is an Accredited Investor which is a party thereto.

- (a) No Material Adverse Effect. Since the Agreement Date, no Parent Material Adverse Effect shall have occurred.

## ARTICLE VII

### TERMINATION

7.1 Termination. This Agreement may be terminated and the Transactions abandoned at any time prior to the Closing:

- (a) By the mutual written consent of the Company and Parent;

(b) By either the Company or Parent, upon written notice to the other Party, if the Transactions shall not have been consummated on or before the date which is thirty (30) days after the Agreement Date, which date may be extended from time to time by mutual written consent of Parent and the Company (such date, as it may be so extended from time to time, the “Outside Date”); provided, however, that the right to terminate this Agreement under this Section 7.1(b) shall not be available to a Party whose failure to perform any of its obligations under this Agreement has been a principal cause of or directly resulted in the failure of the Transactions to occur on or before the Outside Date;

(c) By the Company or Parent, if any final and non-appealable Order or any Law has the effect of enjoining, restraining, preventing, prohibiting or making illegal the consummation of the Transactions;

(d) By Parent, if any of the representations or warranties of the Company set forth in ARTICLE III shall not be true and correct or if the Company has failed to perform any covenant or agreement on the part of the Company set forth in this Agreement (including an obligation to consummate the Closing) such that the condition to Closing set forth in either Section 6.1(a) or Section 6.1(b) would not be satisfied and the breach or breaches causing such representations or warranties not to be true and correct, or the failures to perform any covenant or agreement, as applicable, are not cured on or prior to the earlier of (i) twenty (20) Business Days after written notice thereof is delivered to the Company and (ii) the Outside Date; provided that this provision shall not be available to Parent if Parent is then in breach of this Agreement;

(e) By the Company, if any of the representations or warranties of Parent set forth in ARTICLE IV shall not be true and correct or if Parent has failed to perform any covenant or agreement on the part of Parent set forth in this Agreement (including an obligation to consummate the Closing) such that the conditions to Closing set forth in either Section 6.2(a) or Section 6.2(b) would not be satisfied and the breach or breaches causing such representations or warranties not to be true and correct, or the failures to perform any covenant or agreement, as applicable, are not cured on or prior to the earlier of (i) twenty (20) Business Days after written notice thereof is delivered to Parent and (ii) the Outside Date; provided that this provision shall not be available to the Company if the Company is then in breach of this Agreement;



(f) By Parent, upon written notice to the Company, if since the Agreement Date a Company Material Adverse Effect has occurred; and

(g) By the Company, upon written notice to Parent, if since the Agreement Date a Parent Material Adverse Effect has occurred.

7.2 Effect of Termination. In the event this Agreement is terminated pursuant to Section 7.1, this Agreement shall become null and void (other than the provisions of this ARTICLE VII, Section 5.4 (Public Announcement), Section 5.6 (Confidentiality), Section 8.5(e) (Indemnification; Holders' Representative Losses), Section 9.14 (Governing Law) and Section 9.15 (Exclusive Jurisdiction; Venue; Service of Process) and any provision hereof that forms the basis for a claim of willful breach of this Agreement prior to the termination of this Agreement, all of which shall survive termination of this Agreement and remain in full force and effect, without further liability on the part of the Parties or any of their respective directors, officers or Affiliates other than with respect to circumstances giving rise to the termination of this Agreement as result of a Party's willful breach of any provision of this Agreement prior to the termination of this Agreement.

## ARTICLE VIII

### SURVIVAL AND INDEMNIFICATION

8.1 Survival. All representations and warranties of the Parties contained in this Agreement or any other Transaction Agreement or in any certificate or schedule delivered hereunder or thereunder shall survive the Closing until the date that is twelve (12) months after the Closing Date (the "General Survival Date"); provided, however, that, (i) the Fundamental Representations and claims for Intentional Fraud shall survive until the expiration of the applicable statute of limitations and (ii) all of the covenants, agreements and obligations of the Parties contained in this Agreement [\*] or any other document, certificate, schedule or instrument delivered or executed in connection herewith that are intended to survive the Closing shall survive the Closing and continue in full force and effect until fully performed (the General Survival Date or the last day of any of the periods specified in clauses (i) and (ii) of this Section 8.1, each alternatively referred to herein as the "Survival Date"). Notwithstanding the foregoing, if a claim or notice with respect to recovery under the indemnification provisions hereof is given in accordance with the terms hereof prior to the applicable Survival Date, the claim and any representations and warranties or covenants underlying such claim shall continue until such claim is finally resolved pursuant to the terms of this ARTICLE VIII. It is the express intent of the parties that, if an applicable survival period as contemplated by this Section 8.1 is shorter than the statute of limitations that would otherwise apply, then, by contract, the applicable statute of limitations shall be reduced to the survival period contemplated hereby. The parties further acknowledge that the time periods set forth in this Section 8.1 for the assertion of claims under this Agreement are the result of arms'-length negotiation among the parties and that they intend for the time period to be enforced as agreed by the parties.

#### 8.2 Indemnification.

(a) Indemnification by Holders and Parent.

(i) Subject to the terms, conditions and limitations of this ARTICLE VIII, (x) from and after the Agreement Date until the Closing, the Company, and (y) following the Closing, each Consenting Holder, and with respect to any recoveries against the Indemnity Hold-Back Amount or the Expense Fund Amount, each Company Optionholder and each other Holder (who shall be deemed bound by references in this ARTICLE VIII to “Consenting Holders” in such regard as the context requires), severally (in accordance with its Pro Rata Portion which, with respect to any recoveries against the Indemnity Hold-Back Amount or the Expense Fund Amount, shall be calculated with reference to all Holders and Company Optionholders rather than just Consenting Holders) and not jointly, shall indemnify and hold harmless each Parent Indemnified Person from and against any Loss which such Parent Indemnified Person suffers, sustains or becomes subject to, as a result of or based upon or arising out of (and whether or not involving a Third Party Claim):

(A) any breach of, or misrepresentation or inaccuracy in, any of the representations or warranties (other than the Company Fundamental Representations) made by the Company in this Agreement or in any other Transaction Agreement to which it is a party, including in any certificate delivered by or on behalf of the Company pursuant hereto;

(B) any breach of, or misrepresentation or inaccuracy in, any of the Company Fundamental Representations;

(C) any breach of or failure to perform any covenant or agreement of the Company provided for in this Agreement or any other Transaction Agreement with respect to covenants required to be performed prior to the Closing.

(D) any errors or omission in the calculations delivered to Parent pursuant to Section 2.10;

(E) any inaccuracy in the Allocation Schedule;

(F) any Intentional Fraud or willful misconduct committed by the Company, including any director, officer or Employee of the Company, under this Agreement or any other Transaction Agreement;

(G) any Action brought by a Holder (or any other Person claiming rights by, through or associated with such Holder) that seeks to challenge the adequacy of the consideration received by such Holder pursuant to this Agreement;

(H) [\*]; and

(I) (x) any nonpayment by the Closing Date’s end of any Pre-Closing Taxes of the Company (taking into account estimated payments of, and any other amounts creditable against, such Taxes), but only to the extent such Taxes were not included in the computation of the Closing Net Working Capital or otherwise in the calculation of the Final Purchase Price as finally determined and do not result from any action of Parent on the Closing Date following the Closing; (y) all Taxes of any member of an affiliated, consolidated, combined or unitary group of which the Company (or any predecessor of the Company) is or was a member on or prior to the

Closing Date, including pursuant to Treasury Regulations Section 1.1502-6 or any analogous or similar state, local, or non-U.S. Law or regulation; and (z) any and all Taxes of any Person imposed on the Company as a transferee or successor, by contract or pursuant to any applicable Law, which Taxes relate to an event or transaction occurring before the Closing.

(ii) Subject to the terms, conditions and limitations of this ARTICLE VIII, Parent shall indemnify and hold harmless each Holder Indemnified Person from and against any Loss which such Holder Indemnified Person may suffer, sustain or become subject to, as a result of or based upon or arising out of (and whether or not involving a Third Party Claim):

(A) any breach of, or misrepresentation or inaccuracy in any of the representations or warranties made by Parent in this Agreement or in any other Transaction Agreement to which it is a party; and

(B) any breach of or failure to perform any covenant or agreement of Parent provided for in this Agreement or any other Transaction Agreement.

(b) Limitations on Claims. Notwithstanding the foregoing:

(i) With respect to any claim seeking recovery of any Loss under Section 8.2(a)(i)(A) above (other than with respect to any claims arising from any Intentional Fraud):

(A) no Holder will have any liability for any such Loss until the aggregate amount of all such Losses exceeds an amount equal to \$350,000 (the "Basket") (in which case the Parent Indemnified Persons shall be entitled thereafter to be indemnified for Losses only to the extent such Losses exceed, on an aggregate basis, the Basket amount); and

(B) the Holders will not have any Liability for any such Loss to the extent that the aggregate amount of all such Losses for which Holders have liability exceeds the remedies available to the Parent Indemnified Persons through the Offset Right (i.e., recourse to the Indemnification Hold-Back Cash Amount and the Indemnification Hold-Back Shares).

(ii) No Parent Indemnified Person shall be entitled to recover any Losses under this ARTICLE VIII to the extent the amount of such Losses has actually been recovered by such Parent Indemnified Person from a Person other than another Party to this Agreement, and each Parent Indemnified Person shall, to the extent applicable, use commercially reasonable efforts to seek indemnification or other redress pursuant to the terms of any Contract to which the Company or Parent is a party and by which such Person has the right to seek indemnification from any third party.

(iii) The Parent Indemnified Persons shall not be entitled to indemnification with respect to any Losses as a result of or based upon or arising from any claim or Liability to the extent such claim or Liability is taken into account in determining the amount of any adjustment to the Upfront Purchase Price in accordance with Section 2.18.

(iv) If any Indemnifying Party makes any indemnification payment pursuant to this ARTICLE VIII or otherwise by reason of the transactions contemplated hereby under any theory of recovery, such Indemnifying Party shall be subrogated, to the extent of such payment and to the extent permitted by applicable Law, to any rights and remedies of the Indemnified Party to recoup such amounts from third parties with respect to the matters giving rise to indemnification hereunder. Notwithstanding anything in this Agreement to the contrary, however, except with respect to claims to the extent actually covered by the D&O Tail Policy, no Holder shall be subrogated to any rights or remedies, or otherwise make any claim against the Company or any other Parent Indemnified Person (regardless of the facts or the kind of Loss at issue), and each Consenting Holder, by virtue of adopting this Agreement and approving the Transactions (including the Mergers) and the execution of a Written Consent and Joinder Agreement, expressly waives any right of subrogation, contribution, advancement, indemnification or other claim against the Company or any other Parent Indemnified Person with respect to any indemnification obligation or any other liability to which such Consenting Holder may become subject under or in connection with this Agreement.

(v) Subject to the other limitations set forth in this Agreement, the aggregate amount of all Losses for which a Consenting Holder shall be liable pursuant to this Agreement shall be the amount of the Final Purchase Price actually received by such Consenting Holder (with Stock Consideration Shares deemed, for this purpose, to have a per share value equal to the Merger Consideration Share Price).

(c) Mitigation; Reduction of Losses. The Parties shall cooperate and use commercially reasonable efforts to mitigate any Losses for which an Indemnified Person is entitled to indemnification (including against available insurance policies and third parties to the extent available); provided, however, that no Party shall be required to take any action to mitigate Losses prior to seeking indemnification hereunder. All insurance proceeds and amounts from third parties received by any Indemnified Person or any of its Affiliates in respect of any Losses shall reduce the Indemnifying Party's obligations hereunder by the amounts received (net of (i) costs and expenses incurred by the Indemnified Party in recovering such amounts and (ii) any increase in insurance premiums payable by the Indemnified Party as a result of recovering such amounts). In the event that any Indemnified Person or any of its Affiliates receives any insurance proceeds with respect to any Losses subsequent to the receipt by such Indemnified Person of any indemnification payment hereunder in respect of such Losses, appropriate refunds shall be made promptly by the Indemnified Person of all or the relevant portion of such indemnification payment (net of any related deductibles).

(d) Calculation of Losses. Solely for the purposes of calculating the amount of Losses pursuant to this ARTICLE VIII (and not for determining the existence of a breach of any representation or warranty), the representations and warranties of the Company in this Agreement that are qualified by "materiality," "Company Material Adverse Effect" or a similar qualification shall be deemed to be made without such materiality, Company Material Adverse Effect or similar qualifiers; provided, however, that this Section 8.2(d) shall not apply to the term "Material Contract."

### 8.3 Offset Right.

(a) Offset Right. Without limiting any other remedies of the Parent Indemnified Persons, from and after the Closing Date, and subject to the limitations set forth in this ARTICLE VIII, the Parent Indemnified Persons shall be entitled to recover (the “Offset Right”) against the Indemnification Hold-Back Cash Amount and the Indemnification Hold-Back Shares (to the extent any Indemnification Hold-Back Cash Amount and Indemnification Hold-Back Shares remain at the time the Parent Indemnified Persons seek to exercise the Offset Right), the amount of any Losses as to which the Holders are obligated to indemnify and hold the Parent Indemnified Persons harmless from under Section 8.2(a); provided, however, the Parent Indemnified Persons shall pursue claims for Losses (other than with respect to Intentional Fraud or willful misconduct) only against the Indemnification Hold-Back Cash Amount and Indemnification Hold-Back Shares until such time as the claims hereunder for Losses equal or exceed the available Indemnification Hold-Back Cash Amount and the value of the Indemnification Hold-Back Shares or the Indemnification Hold-Back Cash Amount and the Indemnification Hold-Back Shares have been released.

(b) Exercise of Offset Right. To exercise the Offset Right, Parent shall (on behalf of Parent or any other Parent Indemnified Persons at issue), prior to the Second Indemnification Hold-Back Payment Date, deliver to Holders’ Representative at the notice address set forth in Section 9.2 (as the same may be amended from time to time as provided therein and including all Persons to be copied on any notice to Holders’ Representative), a certificate signed by Parent (an “Offset Certificate”): (i) stating in good faith that one or more of the Parent Indemnified Persons has suffered, sustained or become subject to Losses which are entitled to be recovered pursuant to the Offset Right (the “Stated Damages”); and (ii) specifying to the extent practicable in reasonable detail the individual items of Stated Damages and the nature of the breach or other circumstance to which each such item is related. Upon the timely delivery of an Offset Certificate stating a bona fide claim for Stated Damages, any distribution of the Indemnification Hold-Back Cash Amount and Indemnification Hold-Back Shares and, as applicable, any payment of cash pursuant to Sections 2.6(c)(ii)(D), 2.6(c)(iii)(C), 2.6(c)(iv)(C) and 2.7(a)(C), as applicable, shall be stayed to the extent of the Stated Damages (subject to the limitations set forth in this ARTICLE VIII).

(c) Perfection of Offset Right. After the expiration of a period of thirty (30) days following the time of delivery of an Offset Certificate to Holders’ Representative, the Offset Right shall be deemed perfected as to the applicable Stated Damages and the Indemnification Hold-Back Shares issuable pursuant to Section 2.6(c)(ii)(D) and the Indemnification Hold-Back Cash Amount payable pursuant to Sections 2.6(c)(iii)(C), 2.6(c)(iv)(C) and 2.7(a)(C), as applicable, shall be reduced by an equal amount unless, prior to the expiration of such thirty (30) day period, Holders’ Representative objects in a written statement delivered to Parent to claims made in the Offset Certificate, setting forth in reasonable detail the objections to the claim for Stated Damages.

(d) Objection to Offset Right. If Holders’ Representative shall timely object in writing to an exercise of the Offset Right by Parent, Holders’ Representative and Parent shall attempt in good faith to agree upon the rights of the respective Parties with respect to each of such claims within thirty (30) days after such objection. If Holders’ Representative and Parent should so agree on a claim, a memorandum setting forth such agreement shall be prepared and signed by such Parties, which shall include a statement of the amount of resulting reduction in the Indemnification Hold-Back Shares issuable pursuant to Section 2.6(c)(ii)(D) and the Indemnification Hold-Back

Cash Amount payable pursuant to Sections 2.6(c)(iii)(C), 2.6(c)(iv)(C) and 2.7(a)(C), as applicable, as applicable.

(e) Settlement of Offset Right. If no agreement can be reached after good faith negotiation between Holders' Representative and Parent pursuant to Section 8.3(d), either Parent or Holders' Representative may initiate an Action in accordance with Sections 9.14 and 9.15 to resolve such dispute. The decision of any such court as to the validity and amount of any claim in such Offset Certificate shall be binding and conclusive upon the Parties.

(f) Application of Offset Right. Any reduction in the Indemnification Hold-Back Shares issuable pursuant to Section 2.6(c)(ii)(D) and the Indemnification Hold-Back Cash Amount payable pursuant to Sections 2.6(c)(iii)(C), 2.6(c)(iv)(C) and 2.7(a)(C), as applicable, pursuant to the Offset Right in this Section 8.3 shall be made with equal priority among the Holders and in accordance with each Holder's Pro Rata Portion (but taking into account any non pro rata claims made in respect of any specific Holder pursuant to Section 8.2(a)), including if applicable as agreed by the Holders' Representative and Parent in accordance with Section 8.3(d) or as finally determined as a result of the Action brought under Section 8.3(e).

#### 8.4 Claims for Indemnification; Resolution of Conflicts.

##### (a) Third Party Claims.

(i) In the event that any Action is instituted, or that any Third Party Claim is asserted, the Indemnified Person seeking indemnification for any related Loss (including a Parent Indemnified Person seeking indemnification for any related loss through an Offset Right) shall notify the Indemnifying Party of any such Action or claim promptly after receiving notice thereof (each, a "Third Party Indemnification Claim Notice"); provided, that, as applicable, a Parent Indemnified Person shall promptly notify the Indemnifying Party and the Holders' Representative of any such Action or claim; provided further, however, that no delay on the part of the Indemnified Person in giving any such notice shall relieve an Indemnifying Party of any indemnification obligations unless, and only to the extent that, such Indemnifying Party is actually and materially prejudiced by such delay and then only to the extent of such prejudice. Subject to the provisions of this Section 8.4(a)(i), and assuming the Indemnified Person does not have the right to elect or does not choose to elect in its Third Party Indemnification Claim Notice to assume the defense of the Third Party Claim in accordance with Section 8.4(a)(v), the Indemnifying Party shall be entitled at its own expense to conduct and control the defense of such Third Party Claim on behalf of the Indemnified Person through counsel chosen by the Indemnifying Party and reasonably acceptable to the Indemnified Person if the Indemnifying Party notifies the Indemnified Person in writing within thirty (30) days of its intent to do so and confirms that the Indemnifying Party shall be obligated to indemnify the Indemnified Person against all resulting Losses in accordance with (and subject to the limitations of) this Agreement. If the Indemnifying Party does not elect within thirty (30) days to defend any Third Party Claim, the Indemnified Person may defend such Third Party Claim as described below in Section 8.4(a)(v). For the avoidance of doubt, Parent acknowledges that if a Third Party Claim is asserted against Parent and such claim alleges both (y) facts or circumstances giving rise to indemnifiable Losses under this Agreement and (z) wrongful conduct

by Parent, then in such case any Parent Indemnified Person shall only be entitled to recover Losses arising under subclause (y).

(ii) If the Indemnifying Party elects to defend any Third Party Claim:

(A) the Indemnifying Party shall use its commercially reasonable efforts to defend such Third Party Claim;

(B) the Indemnified Person, prior to the period in which the Indemnifying Party assumes the defense of such matter, may take such reasonable actions to preserve any and all rights with respect to such matter, without such actions being construed as a waiver of the Indemnified Person's rights to defense and indemnification pursuant to this Agreement and without such actions being determinative of the amount of any indemnifiable Losses, except to the extent the Indemnifying Party's ability to defend such action is actually and materially prejudiced by such actions; and

(C) the Indemnified Person may participate in the defense of such Third Party Claim with separate counsel at its own expense or, if so requested by the Indemnifying Party or, if in the reasonable opinion of counsel to the Indemnified Person, a conflict or potential conflict exists between the Indemnified Person and the Indemnifying Party that would make such separate representation advisable, at the reasonable expense of the Indemnifying Party.

(iii) In connection with this Section 8.4(a)(iii), the Parties agree to:

(A) cooperate with each other in connection with the defense, negotiation or settlement of any such Third Party Claim;

(B) make available witnesses in a timely manner to provide testimony through declarations, affidavits, depositions, or at hearing or trial and to work with each other in preparation for such events consistent with deadlines dictated by the particular Third Party Claim;

(C) preserve all documents and things required by litigation hold orders pending with respect to particular Third Party Claims; and

(D) provide such documents and things to each other, consistent with deadlines dictated by a particular matter, as required by legal procedure or court order, or if reasonably requested by another Party hereto;

provided that such cooperation referenced in clauses (A) through (D) shall not be required if it would reasonably be expected to result in a waiver of any attorney-client, work product or other privilege, and provided further that the Parties shall use commercially reasonable efforts to avoid production of confidential information (consistent with Law), and to cause all communications among Employees, counsel and others representing any party to a Third Party Claim to be made so as to preserve any applicable attorney-client or work-product privileges.

(iv) Except as permitted in this Section 8.4(a)(iv), the Indemnifying Party shall not, without the written consent of the Indemnified Person(s) (such consent not to be unreasonably conditioned, withheld or delayed), settle or compromise any Third Party Claim or permit a default or consent to entry of any judgment (each a “Settlement”); provided, however, that an Indemnified Person’s written consent shall not be required if (x) the claimant provides such Indemnified Person an unqualified release from all liability in respect of the Third Party Claim, (y) such Settlement does not impose any additional liabilities or obligations on the Indemnified Person and (z) with respect to any non-monetary provision of such Settlement, such provisions could not have, or be reasonably expected to have, any adverse effect on the business, assets, financial condition or results of operations of the Indemnified Person and its Subsidiaries, if any. Any Settlement or compromise that does not comply with the preceding sentence shall not be determinative of the amount of Losses with respect to any related claims for indemnification pursuant to this ARTICLE VIII. The costs incurred by Holders’ Representative pursuant to participating in the defense of any Third Party Claims shall constitute Holders’ Representative Losses.

(v) Notwithstanding anything in this Agreement to the contrary, if (w) a Third Party Claim seeks relief other than the payment of monetary damages, (x) the subject matter of a Third Party Claim relates to the ongoing business of the Indemnified Person or its Affiliate, which Third Party Claim, if decided against the Indemnified Person, is reasonably likely to materially and adversely affect the ongoing business of the Indemnified Person, (y) the claim for indemnification relates to or arises in connection with any criminal proceeding, action or indictment, or (z) the Indemnified Person reasonably concludes that the amount of the Third Party Claim and associated defense costs shall exceed the limits on the Indemnifying Party’s obligations under Section 8.2(b) or the Indemnifying Party’s financial resources available to defend against the Third Party Claim, then, in each such case, the Indemnified Person alone shall be entitled to defend such Third Party Claim. If the Indemnified Person elects to exercise such right to defend such Third Party Claim, then the Indemnified Person shall notify the Indemnifying Party of such election within thirty (30) days of the later of (A) receiving the applicable Third Party Indemnification Claim Notice or (B) the occurrence of the event giving rise to the Indemnified Person’s right to make such election pursuant to clause (w), (x), (y) or (z) of this Section 8.4(a)(v). In such event, the Indemnified Person shall instead have the right to be represented by counsel of its choice (of which it shall notify the Indemnifying Party) at the Indemnifying Party’s reasonable expense and to defend such Third Party Claim. If the Indemnified Person elects to defend any such Third Party Claim, then (1) the Indemnified Person shall use its commercially reasonable efforts to defend such Third Party Claim, conduct such defense in a good faith and reasonably diligent manner, keep the Indemnifying Party reasonably informed of the status of such defense, and use commercially reasonable efforts to cooperate with the Indemnifying Party with respect to such defense during the course of such defense, (2) the Indemnifying Party may participate, at its own expense, in the defense of such Third Party Claim and shall be entitled to receive copies of complaints, pleadings, notices and material communications with respect to such Third Party Claim and (3) the Indemnified Person shall not, without the written consent of the Indemnifying Person (such consent not to be unreasonably withheld, conditioned or delay), enter into any Settlement of such Third Party Claim. If the Indemnified Person does not elect to defend such Third Party Claim, then the Indemnifying Party shall then have the right to defend such Third Party Claim as described above in Section 8.4(a)(i).



(vi) Notwithstanding the foregoing, any Third Party Claims in respect of Taxes shall be governed by Section 5.8(c) rather than this Section 8.4(a). To the extent that the provisions of this Section 8.4(a) conflict with the provisions of Section 5.8(c) or Section 5.8(i), Section 5.8(c) or Section 5.8(i) shall control, as applicable.

(b) Notification of Other Indemnification Claims. In order for a Parent Indemnified Person to be entitled to any indemnification for claims other than as contemplated or covered by the Offset Right (although, for the avoidance of doubt, a claim tendered pursuant to the Offset Right shall suffice for all purposes even if not covered, or fully covered, by the Offset Right), such Parent Indemnified Person shall, promptly upon the discovery of the matter giving rise to any Losses, notify Holders' Representative in writing of such Losses specifying in reasonable detail the nature of such Losses and the amounts of liability estimated to accrue therefrom (a "Non-Offset Notice"). The failure to so notify Holders' Representative shall not relieve any Consenting Holder from any liability that such Consenting Holder may have to Parent, except to the extent that any such Consenting Holder is materially prejudiced as a result of such failure. Thereafter, Parent shall keep Holders' Representative reasonably updated with respect to the status of the Losses at issue and the defense thereof. Holders' Representative may object to a claim for indemnification set forth in a Non-Offset Notice by delivering a notice to the Parent Indemnified Person seeking indemnification within thirty (30) days of the delivery of the Non-Offset Notice, setting forth in reasonable detail the objections to the claim. If Holders' Representative either notifies the applicable Indemnified Person that it does not object or does not object in writing by the end of such thirty (30)-day period, such failure to so object shall be an irrevocable acknowledgment that the Parent Indemnified Person is entitled to the full amount of the claims set forth in such Non-Offset Notice, and Holders' Representative (as well as the Holders) shall take all necessary actions under this Agreement to effect payment in respect thereof. If Holders' Representative shall timely object in writing to a Non-Offset Notice, Holders' Representative and Parent shall attempt in good faith to agree upon the rights of the respective Parties with respect to such claim within thirty (30) days after such objection. If Holders' Representative and Parent should so agree on a claim, a memorandum setting forth such agreement shall be prepared and signed by Holders' Representative and Parent. If no agreement can be reached after good faith negotiation between Holders' Representative and Parent, either Parent (or any Parent Indemnified Person) or Holders' Representative may initiate an Action in accordance with Sections 9.14 and 9.15 to resolve such dispute. The decision of any such court as to the validity and amount of any claim in such Non-Offset Notice shall be binding and conclusive upon the Parties.

(c) Claims Unaffected by Investigation. The right of an Indemnified Person to indemnification or to assert or recover on any claim hereunder shall not be affected by any investigation conducted with respect to, or any knowledge acquired or capable of being acquired, at any time, whether before or after the execution and delivery of this Agreement or the Closing, including with respect to the accuracy of or compliance with any of the representations, warranties, covenants, or agreements set forth in this Agreement. The waiver of any condition based on the accuracy of any representation or warranty, or on the performance of or compliance with any covenant or agreement, shall not affect the right to indemnification or other remedy based on such representation, warranty, covenant or agreement.

(d) Surviving Company. The Parties acknowledge and agree that if the Surviving Company suffers, incurs or otherwise becomes subject to any Losses as a result of or in connection with any misrepresentation or inaccuracy in or breach of any representation, warranty, covenant or agreement, then (without limiting any of the rights of the Surviving Company as an Indemnified Person) Parent shall also be deemed, by virtue of its ownership of the stock of the Surviving Company, to have incurred Losses as a result of and in connection with such misrepresentation, inaccuracy or breach.

(e) Exclusive Remedy. Subject to Section 9.9 and Section 5.8, without limiting the provisions of Section 2.18, the Parties acknowledge and agree that the remedies provided for in this ARTICLE VIII shall be the Parties' (other than the Holders' Representative's) sole and exclusive remedy with respect to any and all claims for any breach, inaccuracy, misrepresentation or nonperformance, as applicable, of any representation, warranty, covenant, agreement or obligation set forth herein or otherwise relating to the subject matter of this Agreement, whether based in contract, tort, strict liability, statute, common law or otherwise.

(f) Indemnification Adjusts Purchase Price for Tax Purposes. Each Party shall, including retroactively, treat indemnification payments under this Agreement as well as exercises of the Offset Right as adjustments to the consideration paid in the Transactions for Tax purposes to the extent permitted under applicable Law.

(g) No Subrogation. By virtue of approving the Mergers and the execution of a Written Consent and Joinder Agreement, each Consenting Holder (on behalf of itself and each Person affiliated with such Consenting Holder who has served as an officer, director, employee or consultant of the Company) shall agree not to make any claim for indemnification against any Parent Indemnified Person based on the fact that such Consenting Holder (or any Person affiliated with such Consenting Holder who has served as an officer, director, employee or consultant of the Company) was a controlling person, director, Employee or agent of the Company (whether such claim is for Losses of any kind or otherwise and whether such claim is pursuant to Law, a Charter Document, a Contract or otherwise) with respect to any claim brought by a Parent Indemnified Person against any Consenting Holder (or any Person affiliated with such Consenting Holder who has served as an officer, director, employee or consultant of the Company) under or relating to this Agreement or any other Transaction Agreement or the Transactions. With respect to any claim brought by a Parent Indemnified Person against any Consenting Holder (or any Person affiliated with such Consenting Holder who has served as an officer, director, employee or consultant of the Company) under or relating to this Agreement, any Transaction Agreement or the Transactions, except with respect to claims to the extent actually covered by the D&O Tail Policy, each Consenting Holder (on behalf of itself and each Person affiliated with such Consenting Holder who has served as an officer, director, employee or consultant of the Company) shall further expressly waive any right of subrogation, contribution, advancement, indemnification or other claim against the Company and all other Parent Indemnified Persons with respect to any indemnification obligation or any other liability to which such Consenting Holder (or any Person affiliated with such Consenting Holder who has served as an officer, director, employee or consultant of the Company) may become subject under or in connection with this Agreement.

(h) Specific Element of Consideration. The indemnification obligations of the Holders in this ARTICLE VIII are, without limitation, (i) a specific element of the consideration that induced Parent to enter into this Agreement and to perform its obligations as contemplated hereby and (ii) intended to be fully enforceable on the terms provided in this ARTICLE VIII.

#### 8.5 Holders' Representative.

(a) Appointment. By voting in favor of the adoption of this Agreement, the approval of the principal terms of the Mergers, and the consummation of the Mergers or participating in the Mergers and receiving the benefits thereof, including the right to receive the consideration payable in connection with the Mergers, each Holder shall irrevocably nominate, constitute and appoint Shareholder Representative Services LLC as the "Holders' Representative" for all purposes in connection with this Agreement and the agreements ancillary hereto with full power of substitution, to act in the name, place and stead of the Holders for purposes of executing any documents and taking any actions that Holders' Representative may, in its sole discretion, determine to be necessary, desirable or appropriate, including, without limitation, in connection with any claim for indemnification, compensation or reimbursement under this ARTICLE VIII. Shareholder Representative Services LLC hereby accepts its appointment as Holders' Representative.

(b) Authority. The Holders grant to Holders' Representative full authority to execute, deliver, acknowledge, certify and file on behalf of each such Holder (in the name of any or all of the Holders or otherwise) any and all documents that Holders' Representative may, in its sole discretion, determine to be necessary, desirable or appropriate, in such forms and containing such provisions as Holders' Representative may, in its sole discretion, determine to be appropriate, in performing its duties as contemplated by this Section 8.5(b). Notwithstanding anything in any Transaction Agreement to the contrary: (i) each Indemnified Person shall be entitled to deal exclusively with Holders' Representative on all matters relating to any claim for indemnification, compensation, reimbursement or set off (including Offset Rights) pursuant to ARTICLE VIII; and (ii) after Closing, Parent, each Parent Indemnified Person, and each Holder shall be entitled to rely conclusively (without further evidence of any kind whatsoever) on any document executed or purported to be executed on behalf of any Holder by Holders' Representative and on any other action taken or purported to be taken on behalf of any Holder by Holders' Representative as fully binding upon such Holder. A decision, act, consent or instruction of Holders' Representative after Closing, including an amendment, extension or waiver of this Agreement (or any provision hereof) pursuant to Section 9.4 or Section 9.5 shall constitute a decision of the Holders and shall be final, binding and conclusive upon the Holders. The Exchange Agent, Parent, Merger Sub A, Merger Sub B, and the Surviving Company may rely upon any such decision, act, consent or instruction of Holders' Representative after Closing as being the decision, act, consent or instruction of the Holders. The Exchange Agent, Parent, Merger Sub A, Merger Sub B, and the Surviving Company are hereby relieved from any liability to any Person for any acts done by them in accordance with such decision, act, consent or instruction of Holders' Representative.

(c) Power of Attorney. The powers, immunities and rights to indemnification granted to the Holders' Representative hereunder: (a) are coupled with an interest and are irrevocable; (b) may be delegated by Holders' Representative; (c) shall survive the death, incompetence,

bankruptcy, dissolution or incapacity, as applicable, of each of the Holders and shall be binding on any successor thereto; and (d) shall survive the delivery of an assignment by any Holder of the whole or any fraction of his, her or its interest in the Indemnification Holdback Amount.

(d) Replacement. The Holders' Representative may resign at any time. If Holders' Representative is dissolved, resigns or is otherwise unable to fulfill its responsibilities hereunder, the Holders shall (by consent of those Persons entitled, or who were entitled, to at least a majority of the Indemnification Hold-Back Shares), within ten (10) days after such dissolution, resignation or inability, appoint a successor to Holders' Representative reasonably satisfactory to Parent. Any such successor shall succeed Holders' Representative as Holders' Representative hereunder. If for any reason there is no Holders' Representative at any time, all references herein to Holders' Representative shall be deemed to refer to the Holders who may take action by the written consent of Persons entitled to at least a majority of any further distributions hereunder.

(e) Indemnification; Holders' Representative Losses. The Holders' Representative will incur no liability of any kind with respect to any action or omission by the Holders' Representative in connection with the Holders' Representative's services pursuant to this Agreement and any agreements ancillary hereto, except in the event of liability directly resulting from the Holders' Representative's gross negligence or willful misconduct. The Holders' Representative shall not be liable for any action or omission pursuant to the advice of counsel. The Holders will indemnify, defend and hold harmless the Holders' Representative from and against Holders' Representative Losses, in each case as such Holders' Representative Loss is suffered or incurred; provided, that in the event that any such Holders' Representative Loss is finally adjudicated to have been directly caused by the gross negligence or willful misconduct of the Holders' Representative, the Holders' Representative will reimburse the Holders the amount of such indemnified Holders' Representative Loss to the extent attributable to such gross negligence or willful misconduct. If not paid directly to the Holders' Representative by the Holders, any such Holders' Representative Losses may be recovered by the Holders' Representative from (i) the funds in the Expense Fund and (ii) the Indemnification Hold-Back Cash Amount and the Indemnification Hold-Back Shares at such time as remaining amounts or shares would otherwise be distributable to the Holders; provided, that while this section allows the Holders' Representative to be paid from the aforementioned sources of funds, this does not relieve the Holders from their obligation to promptly pay such Holders' Representative Losses as they are suffered or incurred, nor does it prevent the Holders' Representative from seeking any remedies available to it at law or otherwise. In no event will the Holders' Representative be required to advance its own funds on behalf of the Holders or otherwise. Notwithstanding anything in this Agreement to the contrary, any restrictions or limitations on liability or indemnification obligations of, or provisions limiting the recourse against non-parties otherwise applicable to, the Holders set forth elsewhere in this Agreement are not intended to be applicable to the indemnities provided to the Holders' Representative under this section. The foregoing indemnities will survive the Closing, the resignation or removal of the Holders' Representative or the termination of this Agreement.

(f) Expense Fund. Upon the Closing, Parent shall wire the Expense Fund Amount to the Holders' Representative. The Expense Fund Amount shall be held by the Holders' Representative in a segregated client account and shall be used for the purposes of paying directly

or reimbursing the Holders' Representative for any third party expenses incurred pursuant to this Agreement and the agreements ancillary hereto (the "Expense Fund"). The Holders' Representative is not providing any investment supervision, recommendations or advice and shall have no responsibility or liability for any loss of principal of the Expense Fund other than as a result of its gross negligence or willful misconduct. The parties agree that the Holders' Representative is not acting as a withholding agent or in any similar capacity in connection with the Expense Fund, and has no tax reporting or income distribution obligations. The Holders will not receive any interest or earnings on the Expense Fund and irrevocably transfer and assign to the Holders' Representative any ownership right that they may otherwise have had in any such interest or earnings. The Holders' Representative will hold these funds separate from its corporate funds, will not use these funds for its operating expenses or any other corporate purposes and will not voluntarily make these funds available to its creditors in the event of bankruptcy. As soon as practicable following the completion of the Holders' Representative's responsibilities, the Holders' Representative shall distribute the remaining Expense Fund (if any) to the Holders based on such Holder's Pro Rata Portion, which shall be calculated with reference to all Holders and Company Optionholders rather than just Consenting Holders, except in the case of payments to employees or former employees of the Company for which employment tax withholding is required, which such amounts shall be delivered to Parent or the Surviving Company and paid through Parent's or surviving corporation's payroll processing service or system, as directed by the Holders' Representative advisory committee. For tax purposes, the Expense Fund will be treated as having been received and voluntarily set aside by the Consenting Holders at the time of Closing.

## ARTICLE IX

### GENERAL PROVISIONS

9.1 Interpretation. The following rules shall apply to the interpretation and construction of the terms and provisions of this Agreement and the other Transaction Agreements:

(a) Provisions.

(i) When a reference is made in this Agreement or another Transaction Agreement to an "Article," "Section," "Exhibit" or "Schedule," such reference shall be to an Article or Section of, or an Exhibit or Schedule to, this Agreement unless otherwise indicated.

(ii) The table of contents and headings contained in this Agreement are for reference purposes only and shall not affect in any way the meaning or interpretation of this Agreement.

(iii) Whenever the words "include," "includes," or "including" are used in this Agreement or any other Transaction Agreement, such words shall be deemed to be followed by the words "without limitation."

(iv) The words “hereof,” “herein,” and “hereunder” and words of similar import when used in this Agreement refer to this Agreement as a whole and not to any particular provision of this Agreement unless otherwise expressly indicated in the accompanying text.

(v) The use of “or” is not intended to be exclusive unless otherwise expressly indicated in the accompanying text.

(vi) The defined terms contained in this Agreement or any of the other Transaction Agreements are applicable to the singular as well as the plural forms of such terms. Reference to the masculine gender shall be deemed to also refer to the feminine gender and *vice versa*.

(vii) A reference to documents, instruments or agreements also refers to all addenda, exhibits or schedules thereto.

(viii) Any reference to a provision or part of a Law shall include a reference to that provision or part as it may be renumbered or amended from time to time and any successor provision or part or any renumbering or amendment thereof unless otherwise indicated herein.

(ix) References to “deliver,” “furnish,” “provided” or “made available” means that such documents or information referenced are contained, as of a date which is at least two (2) Business Days prior to the Agreement Date, in the Company’s “Clear documents” electronic data room hosted by Box Inc.

(x) When calculating the period of time before which, within which or following which, any act is to be done or step taken pursuant to this Agreement, the date that is the reference date in calculating such period shall be excluded. If the last day of such period is a non-Business Day, the period in question shall end on the next succeeding Business Day.

(b) No Presumption. The Parties have participated jointly in the negotiation and drafting of this Agreement and, in the event any ambiguity or question of intent or interpretation arises, this Agreement shall be construed as jointly drafted by the Parties and no presumption or burden of proof shall be used to favor or disfavor any Party by virtue of the authorship of any provision of this Agreement.

9.2 Notices. All notices, waivers, consents and other communications to any Party hereunder shall be in writing and shall be deemed given (i) when personally delivered, (ii) when receipt is electronically confirmed, if sent by email of a .pdf document, (iii) one (1) Business Day after deposit with a nationally recognized overnight courier, specifying next day delivery, with proof of receipt or (iv) three (3) Business Days after being sent by registered or certified mail, return receipt requested and postage prepaid, in each case to the Parties at the address, or if applicable, email address following such Party’s name below or such other address or email address as such Party may subsequently designate to the other Parties by notice in accordance with this Section 9.2:

If to Parent, Merger Sub A or Merger Sub B, to:

Invitae Corporation  
1400 16th Street  
San Francisco, CA 94103  
Attention: Tom Brida, General Counsel  
Email:

with copies (which shall not constitute notice) to:

Pillsbury Winthrop Shaw Pittman LLP  
12255 El Camino Real, Suite 300  
San Diego, CA 92130  
Attention: Mike Hird  
Email: mike.hird@pillsburylaw.com

If to the Company (prior to the Closing), to:

Clear Genetics, Inc.  
2 Harrison St.  
San Francisco, CA 94105  
Attention: Moran Snir  
Email:

with a copy (which shall not constitute notice) to:

Zysman, Aharoni, Gayer and Sullivan & Worcester LLP  
1633 Broadway  
New York, NY 10019  
Attention: Scott Kaufman  
Email: skaufman@sullivanlaw.com

and

LglBiz by Adv. Eliav Azulay Oz  
10 Hamenofim St.,  
3rd Fl., Suite 322  
Herzeliya, 46725 Israel  
Attention: Eliav Azulay Oz  
Email:

If to Holders' Representative or the Holders (following the Closing), to:

Shareholder Representative Services LLC  
950 17<sup>th</sup> Street, Suite 1400  
Denver, CO 80202  
Attention: Managing Director  
Telephone: (303) 648-4085

Facsimile: (303) 623-0294  
Email: deals@srsacquiom.com

9.3 Assignment and Succession. Neither this Agreement nor any of the rights, interests or obligations hereunder may be assigned or delegated by any of the Parties without the written consent of the other Parties, except that Parent, Merger Sub A or Merger Sub B may, without the prior consent of any other Party, collaterally assign this Agreement to any lender; provided that no such assignment shall relieve the assigning Party of any of its obligations hereunder. Any assignment of this Agreement or any of the rights, interests or obligations hereunder not permitted under this Section 9.3 shall be null and void *ab initio*. Subject to the foregoing terms of this Section 9.3, this Agreement shall be binding upon, inure to the benefit of and be enforceable by the Parties and their respective successors and permitted assigns.

9.4 Amendment or Supplement. Subject to the requirements of applicable Law, this Agreement may be amended at any time by execution of an instrument in writing identifying itself as an amendment signed, when amended prior to the Closing, by Parent, Merger Sub A, Merger Sub B and the Company and, when amended on or after the Closing, by Parent and Holders' Representative. For purposes of this Section 9.4, the Consenting Holders have agreed pursuant to the Written Consent and Joinders that any amendment of this Agreement consented to by Holders' Representative shall be binding on and enforceable against them, whether or not they have signed this Agreement or such amendment.

9.5 Waivers. No waiver of any provision of this Agreement shall be valid and binding unless it is in writing and signed by the Party against whom the waiver is to be effective. No failure on the part of any Party in exercising any right, privilege or remedy hereunder and no delay on the part of any Party in executing any right, privilege or remedy under this Agreement, shall operate as a waiver thereof, nor shall any single or partial exercise of any such right preclude any other or further exercise thereof or the exercise of any other right hereunder. No notice to or demand on a Party made hereunder shall operate as a waiver of any right of the Party giving such notice or making such demand to take further action without notice or demand as permitted hereunder.

9.6 Entire Agreement. This Agreement, including the Schedules and Exhibits hereto and the other documents referred to herein which form a part hereof, and the Transaction Agreements and the Shareholder Representative Services LLC engagement letter contain the entire understanding of the Parties with respect to the subject matter contained herein and therein. This Agreement supersedes all prior and contemporaneous, agreements, arrangements, contracts, discussions, negotiations, undertakings and understandings (whether written or oral) between the Parties with respect to such subject matter (other than the Transaction Agreements).

9.7 No Third-Party Beneficiaries. Nothing in this Agreement, express or implied, is intended to or shall confer upon any Person (other than the Parties) any right, benefit or remedy of any nature whatsoever under this Agreement, except (a) as otherwise provided in Section 5.16 and (b) that after the Closing, Parent Indemnified Persons shall be third party beneficiaries for purposes of enforcing the rights granted to such Parent Indemnified Persons. For the avoidance of doubt, no consent of any Indemnified Person shall be necessary to amend any provision of this Agreement.



9.8 Remedies Cumulative. Except as otherwise provided in this Agreement, all rights and remedies of each of the Parties shall be cumulative and the exercise of any one or more rights or remedies shall not preclude the exercise of any other right or remedy available hereunder or under applicable Law.

9.9 Specific Performance. The Parties agree that each of the Parties would be irreparably harmed if any of the provisions of this Agreement are not performed in accordance with their specific terms and that any breach of this Agreement by the other Parties could not be compensated adequately by monetary damages alone. Accordingly, the Parties agree that, in addition to any other remedy to which such Party may be entitled to at Law or in equity, each Party shall be entitled to temporary, preliminary and/or permanent injunctive relief or injunctions to prevent breaches or threatened breaches of this Agreement and to enforce specifically the terms and provisions of this Agreement (including the right to compel the other Parties to cause the Transactions to be consummated on the terms and subject to conditions set forth in this Agreement) without having to prove irreparable harm or that monetary damages would be inadequate. The Parties expressly waive any requirement under any Law that the other Parties obtain any bond or give any other undertaking in connection with any action seeking injunctive relief or specific performance of any of the provisions of this Agreement. Each of the Parties further agrees that in the event of any action for specific performance relating to this Agreement or the Transactions, such Party shall not assert and hereby waives the defense that a remedy at Law would be adequate or that specific performance is not an appropriate remedy for any reason in Law or equity.

9.10 Severability. If a court of competent jurisdiction finds that any term or provision of the Agreement is invalid, illegal or unenforceable under any Law or public policy, the remaining provisions of the Agreement shall remain in full force and effect if the economic and legal substance of this Agreement and the Transactions shall not be affected in any manner materially adverse to any Party. Any such term or provision found to be illegal, invalid or unenforceable only in part or in degree shall remain in full force and effect to the extent not invalid, illegal or unenforceable. Upon the determination that any term or provision is invalid, illegal or unenforceable, the Parties intend that such provision shall be construed by modifying or limiting it so as to be valid and enforceable to the maximum extent possible under applicable Law and compatible with the consummation of the Transactions as originally intended.

9.11 Costs and Expenses. Except as otherwise specified herein, whether or not the Transactions are consummated, each Party shall pay all costs and expenses it has incurred in connection with this Agreement and the Transactions.

9.12 Time of Essence. The Parties acknowledge that the Outside Date specified in Section 7.1(b) is essential and therefore agree that no Party wishing to terminate this Agreement in accordance with Section 7.1(b) shall be required to extend the Outside Date to allow any other Party to satisfy any condition or perform any obligation under this Agreement.

9.13 Counterparts. This Agreement may be executed in several counterparts, each of which shall be deemed an original copy of this Agreement and all of which, when taken together, shall constitute one instrument. The exchange of copies of this Agreement and manually executed signature pages by transmission by email of a .pdf of a handwritten original signature or signatures

to the other Parties shall constitute effective execution and delivery of this Agreement and may be used in lieu of the original Agreement for all purposes. The signature of a Party transmitted by electronic means shall be deemed to be an original signature for any purpose.

9.14 Governing Law. This Agreement and all claims or causes of action (whether sounding in contract or tort) arising under or related to this Agreement, shall be governed by and construed in accordance with, the Laws of the State of Delaware, without regard to any rule or principle that might refer the governance or construction of this Agreement to the Laws of another jurisdiction.

9.15 Exclusive Jurisdiction; Venue; Service of Process. In any action or proceeding between any of the Parties arising under or related to this Agreement, the other Transaction Agreements or the Transactions, each of the Parties (i) knowingly, voluntarily, irrevocably and unconditionally consents and submits to the exclusive jurisdiction and venue of the state or federal courts located in the City and County of San Francisco, California, and each of the Parties hereby irrevocably submits to the exclusive jurisdiction of the aforesaid courts, (ii) agrees that all claims in respect of any such action or proceeding shall be heard and determined exclusively in accordance with clause (i) of this Section 9.15, (iii) waives any objection to the laying of venue of any such action or proceeding in such courts, including any objection that any such action or proceeding has been brought in an inconvenient forum or that the court does not have jurisdiction over any Party and (iv) agrees that service of process upon such Party in any such action or proceeding shall be effective if such process is given as a notice in accordance with Section 9.2, except in the case of the Holders. The Parties agree that any Party may commence a proceeding in a court other than the above-named courts solely for the purpose of enforcing an order or judgment issued by one of the above-named courts.

9.16 Consent to Representation; Privileged Communications. If the Holders' Representative so desires, acting on behalf of the Holders and without the need for any consent or waiver by Parent, the Surviving Company or their Affiliates, Zysman, Aharoni, Gayer and Sullivan & Worcester LLP and/or Sullivan & Worcester LLP ("Sullivan") and/or LglBiz by Adv. Eliav Azulay Oz ("LglBiz") shall be permitted to represent the Holders' Representative and/or any Holders and their Affiliates after the Closing in connection with any matter, including anything related to the Transactions, any other agreements referenced herein or any disagreement or dispute relating thereto. Without limiting the generality of the foregoing, after the Closing, Sullivan and LglBiz shall be permitted to represent the Holders' Representative, the Holders, any of their agents and Affiliates, or any one or more of them, in connection with any negotiation, transaction, or dispute (including any litigation, arbitration, or other adversary proceeding) with Parent, the Surviving Company or any of their agents or Affiliates under or relating to this Agreement, any of the Transactions, and any related matter, such as claims or disputes arising under other agreements entered into in connection with this Agreement, including with respect to any indemnification claims. Parent and the Company further agree that, as to all communications among Sullivan or LglBiz and the Company (prior to the Closing), the Holders' Representative and the Holders and their respective Affiliates (individually and collectively, the "Holder Group") to the extent relating to the Transactions, the attorney-client privilege and the expectation of client confidence belongs solely to the Holder Group and may be controlled only by the Holder Group and shall not pass to or be

claimed by Parent or the Surviving Company, because the interests of Parent and its Affiliates were directly adverse to the Company, the Holders and the Holders' Representative at the time such communications were made. This right to the attorney-client privilege shall exist even if such communications may exist on the Company's computer system or in documents in the Company's possession. Notwithstanding the foregoing, in the event that a dispute arises between the Parent and the Surviving Company, on the one hand, and a Person other than a Party to this Agreement, on the other hand, after the Closing, the Surviving Company may assert the attorney-client privilege to prevent disclosure to such third-party of confidential communications by Sullivan or LgLBiz to the Company; provided, however, that the Surviving Company may not waive such privilege without the prior written consent of the Holders' Representative.

\* \* \*

*[Signature page follows]*

**IN WITNESS WHEREOF**, the Parties have caused this Agreement and Plan of Merger to be duly executed and delivered as of the date first above written.

**PARENT: INVITAE CORPORATION**

By: /s/ Sean E. George, Ph.D.  
Name: Sean E. George, Ph.D.  
Title: President and Chief Executive Officer

**MERGER SUB A: CATALINA MERGER SUB A INC.**

By: /s/ Leigh Rubinstein  
Name: Leigh Rubinstein  
Title: Chief Executive Officer

**MERGER SUB B: CATALINA MERGER SUB B LLC**

By: /s/ Leigh Rubinstein  
Name: Leigh Rubinstein  
Title: President

**COMPANY:**

**CLEAR GENETICS, INC.**

By: /s/ Moran Shochat Snir\_\_\_\_\_

Name: Moran Shochat Snir

Title: Chief Executive Officer

**HOLDERS' REPRESENTATIVE: SHAREHOLDER REPRESENTATIVE SERVICES LLC, solely in its capacity as the  
Holders' Representative**

By: /s/ Sam Riffe\_\_\_\_\_

Name: Sam Riffe

Title: Managing Director

**INVITAE CORPORATION**  
**DESCRIPTION OF SECURITIES REGISTERED PURSUANT TO**  
**SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934**

Invitae Corporation, a Delaware corporation (“we”, “us” or “our”), has one class of securities registered pursuant to Section 12 of the Securities Exchange Act of 1934: our common stock, \$0.0001 par value per share. The general terms and provisions of our common stock are summarized below. This summary does not purport to be complete and is qualified in its entirety by reference to our restated certificate of incorporation and our amended and restated bylaws, each of which has been filed as an exhibit to our most recent Annual Report on Form 10-K filed with the Securities and Exchange Commission (“SEC”), as may be amended by a document filed with one of our periodic reports filed with the SEC subsequent to the date of that Annual Report.

**Common Stock**

We are authorized to issue 400,000,000 shares of common stock. Our common stock is junior to any preferred stock we may issue, including our outstanding Series A convertible preferred stock (“Series A Preferred Stock”). Each holder of common stock is entitled to one vote for each share of common stock held on all matters submitted to a vote of stockholders. The Series A Preferred Stock has no voting rights except as required by law, as modified by our restated certificate of incorporation. We have not provided for cumulative voting for the election of directors in our restated certificate of incorporation. This means that the holders of a majority of the outstanding shares of our common stock voted can elect all of the directors then standing for election. Subject to preferences that may apply to shares of preferred stock outstanding at the time, including our outstanding Series A Preferred Stock, holders of outstanding shares of our common stock are entitled to receive dividends out of assets legally available at the times and in the amounts that our board of directors may determine from time to time. Our Series A Preferred Stock has the right to receive dividends first or simultaneously with payment of dividends on our common stock, in an amount equal to the product of (i) the dividend payable on each share of common stock and (ii) the number of shares of common stock issuable upon conversion of a share of Series A Preferred Stock. Upon our liquidation, dissolution or winding-up, holders of common stock are entitled to share ratably in all assets remaining after payment of all liabilities and the liquidation preferences of any outstanding preferred stock. In the event of our liquidation or dissolution, holders of our Series A Preferred Stock are entitled to receive \$0.001 per share prior to the payment of any amount to any holders of our capital stock ranking junior to the Series A Preferred Stock and thereafter shall participate pari passu with holders of our common stock (on an as-if-converted-to-common-stock basis). Holders of common stock have no preemptive or conversion rights or other subscription rights. There are no redemption or sinking fund provisions applicable to the common stock. All outstanding shares of common stock are fully paid and nonassessable.

**Anti-Takeover Effects of Delaware Law and Our Certificate of Incorporation and Bylaws**

Certain provisions of Delaware law, our restated certificate of incorporation and our amended and restated bylaws could have the effect of delaying, deferring or discouraging another party from acquiring control of us.

*Certificate of Incorporation and Bylaws.* Our restated certificate of incorporation and amended and restated bylaws include provisions that:

- divide our board of directors into three classes, each serving staggered, three-year terms;
-

- authorize the board of directors to issue, without stockholder approval, up to 20,000,000 shares of preferred stock, with such designations, powers, preferences and other rights and qualifications, limitations or restrictions as our board of directors may authorize, which preferred stock could decrease the amount of earnings and assets available for distribution to holders of our common stock or adversely affect the rights and powers, including voting rights, of holders of our common stock, and of which 16,541,177 shares of preferred stock remain undesignated as of December 31, 2019;
- require that any action to be taken by our stockholders be effected at a duly called annual or special meeting and not by written consent;
- specify that special meetings of our stockholders can be called only by the board of directors, the chairman of the board, or the chief executive officer;
- establish an advance notice procedure for stockholder approvals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to the board of directors;
- provide that directors may be removed only for cause;
- establish the Court of Chancery of the State of Delaware as the sole and exclusive forum for certain derivative actions or proceedings brought on our behalf, any action asserting a claim of breach of fiduciary duty, any action asserting a claim against us arising pursuant to the General Corporation Law of the State of Delaware (the “DGCL”), or any action asserting a claim governed by the internal affairs doctrine; and
- require the affirmative vote of holders of at least 66 2/3% of the total votes eligible to be cast in the election of directors to amend, alter, change or repeal our bylaws; and provide that vacancies on our board of directors may be filled only by a majority of directors then in office, even though less than a quorum.

*Delaware anti-takeover statute.* We are subject to the provisions of Section 203 of the DGCL regulating corporate takeovers. In general, Section 203 prohibits a publicly-held Delaware corporation from engaging, under certain circumstances, in a business combination with an interested stockholder for a period of three years following the date the person became an interested stockholder unless:

- prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder; or

- upon completion of the transaction that 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 for purposes of determining the voting stock outstanding, but not the outstanding voting stock owned by the interested stockholder, (1) shares owned by persons who are directors and also officers and (2) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or at or subsequent to the date of the transaction, 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 which is not owned by the interested stockholder.

Generally, a “business combination” includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the “interested stockholder” and an “interested stockholder” is a person who, together with affiliates and associates, owns or, within three years prior to the determination of interested stockholder status, did own 15% or more of a corporation’s outstanding voting stock.

#### **Transfer Agent and Registrar**

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC.

#### **Listing**

Our common stock is listed on The New York Stock Exchange under the symbol “NVTA.”

## REGISTRATION RIGHTS AGREEMENT

This Registration Rights Agreement (this “**Agreement**”) is made and entered into as of November 12, 2019 (the “**Effective Date**”) by and among Invitae Corporation, a Delaware corporation (the “**Company**”), and certain securityholders of Clear Genetics, Inc., a Delaware corporation (“**Clear Genetics**”) listed on Exhibit A hereto (each such securityholder, as well as any permitted transferee of Registrable Securities (as defined below) hereunder, in each case to the extent holding Registrable Securities, a “**Holder**” and collectively, the “**Holders**”).

### RECITALS

WHEREAS, the Company, Clear Genetics, Catalina Merger Sub A Inc., a Delaware corporation and wholly owned subsidiary of the Company (“**Merger Sub A**”), Catalina Merger Sub B LLC, a Delaware limited liability company and wholly owned subsidiary of the Company (“**Merger Sub B**”), and Shareholder Representative Services LLC, a Colorado limited liability company, as Holders’ Representative (as defined therein), have entered into that certain Agreement and Plan of Merger dated as of November 8, 2019 (the “**Merger Agreement**”), pursuant to which (i) Merger Sub A will be merged with and into Clear Genetics, and Clear Genetics shall continue as the surviving entity and wholly owned subsidiary of the Company (the “**Reverse Merger**”) and (ii) promptly thereafter as part of the same overall transaction, Clear Genetics will be merged with and into Merger Sub B, and Merger Sub B shall continue as the surviving entity and wholly owned subsidiary of the Company (the “**Forward Merger**” and, together with the Reverse Merger, the “**Mergers**”);

WHEREAS, in connection with the Mergers and pursuant to the Merger Agreement, the Company issued to the Holders at the Closing (as defined in the Merger Agreement) shares of the Company’s common stock, par value \$0.0001 per share, identified on Exhibit A hereto as Stock Consideration Shares (the “**Shares**”) pursuant to the Merger Agreement; and

WHEREAS, in connection with the consummation of the transactions contemplated by the Merger Agreement, the Company agreed to grant certain registration rights to the Holders as set forth in this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, the parties agree as follows:

### ARTICLE I DEFINITIONS

**Section 1.1 Definitions.** For purposes of this Agreement, the following terms and variations thereof have the meanings set forth below:

“**Affiliate**” means, with respect to any person, any other person that, directly or indirectly, controls, or is controlled by, or is under common control with, such person. For this purpose: (a) “control” (including, with its correlative meanings, “controlled by” and “under common control with”) means the possession, directly or indirectly, of the power to direct or cause the

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direction of management or policies of a Person, whether through the ownership of securities or partnership or other ownership interests, by contract or otherwise; and (b) “person” means any natural person, corporation, limited liability company, partnership, association, trust or other entity.

“**Agreement**” has the meaning set forth in the preamble.

“**Business Day**” means any day, other than a Saturday, Sunday or one on which banks are authorized by law to be closed in New York, New York.

“**Company Indemnitee**” has the meaning set forth in Section 4.1(b).

“**Effective Date**” has the meaning set forth in the preamble.

“**Effectiveness Period**” has the meaning set forth in Section 3.1(b).

“**Exchange Act**” means the Securities Exchange Act of 1934.

“**Grace Period**” has the meaning set forth in Section 3.2(h).

“**Holder Indemnitee**” has the meaning set forth in Section 4.1(a).

“**Indemnified Party**” has the meaning set forth in Section 4.1(c).

“**Indemnifying Party**” has the meaning set forth in Section 4.1(c).

“**Merger Agreement**” has the meaning set forth in the recitals.

“**Registrable Securities**” means the Shares issued to the Holders pursuant to the Merger Agreement and any securities issued or issuable upon any stock split, dividend or other distribution, recapitalization or similar event with respect to such securities; provided, however, that Registrable Securities shall cease to be Registrable Securities with respect to a particular Holder when (i) such securities have been disposed of in accordance with the Registration Statement or pursuant to Rule 144; (ii) such securities may be sold pursuant to Rule 144 without any limitation as to manner-of-sale restrictions or volume limitations; or (iii) such securities cease to be outstanding.

“**Registration Expenses**” means all expenses incurred by the Company in effecting the registration pursuant to this Agreement, including all registration and filing fees, printing expenses, fees and disbursements of counsel for the Company, “blue sky” fees and expenses, and expenses of the Company’s independent registered public accounting firm in connection with any regular or special reviews or audits incident to or required by any such registration, but shall not include Selling Expenses.

“**Registration Statement**” has the meaning set forth in Section 3.1.

“**Rule 144**” means Rule 144 under the Securities Act or any successor or other similar rule, regulation or interpretation of the SEC that may at any time permit the sale of Registrable Securities to the public without registration.

“**Rule 405**” means Rule 405 under the Securities Act or any successor or other similar rule.

“**Rule 415**” means Rule 415 under the Securities Act or any successor or other similar rule providing for offering securities on a continuous or delayed basis.

“**Rule 424**” means Rule 424 under the Securities Act or any successor or other similar rule.

“**Shares**” has the meaning set forth in the recitals.

“**SEC**” means the Securities and Exchange Commission.

“**Securities Act**” means the Securities Act of 1933.

“**Selling Expenses**” means all discounts, selling commissions, fees of selling brokers, dealer managers and similar securities industry professionals and stock transfer taxes applicable to the sale of Registrable Securities and fees and disbursements of counsel for any Holder (other than the fees and disbursements of counsel for the Company included in Registration Expenses).

“**Transfer**” means, directly or indirectly, to sell, transfer, assign, pledge, encumber, hypothecate or similarly dispose of (by merger, testamentary disposition, operation of law or otherwise), either voluntarily or involuntarily, or to enter into any contract, option or other arrangement or understanding with respect to the sale, transfer, assignment, pledge, encumbrance, hypothecation or similar disposition of (by merger, testamentary disposition, operation of law or otherwise) any Shares.

“**Violation**” has the meaning set forth in Section 4.1(a).

## **ARTICLE II TRANSFER RESTRICTIONS**

**Section 2.1 General Transfer Restrictions.** The right of any Holder to Transfer any Shares held by it is subject to the restrictions set forth below.

(a) Each Holder acknowledges that the Shares have not been registered under the Securities Act and may not be Transferred except pursuant to an effective registration statement under the Securities Act or pursuant to an exemption from registration under the Securities Act. Each Holder covenants that the Shares will only be disposed of pursuant to an effective registration statement under, and in compliance with the requirements of, the Securities Act or pursuant to an

available exemption from the registration requirements of the Securities Act, and in compliance with any applicable state and foreign securities laws. In connection with any Transfer of the Shares other than a Transfer (i) pursuant to an effective registration statement, (ii) to the Company or (iii) pursuant to Rule 144, the Company may require the Holder to provide to the Company an opinion of counsel selected by the Holder and reasonably acceptable to the Company, the form and substance of which opinion shall be reasonably satisfactory to the Company, to the effect that such Transfer does not require registration under the Securities Act.

(b) Each Holder agrees to the affixing, so long as is required by this Section 2.1, of the following legend on any certificate or book-entry position evidencing any of the Shares:

**THESE SECURITIES HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "ACT"), OR ANY STATE SECURITIES LAWS AND MAY NOT BE TRANSFERRED IN THE ABSENCE OF SUCH REGISTRATION OR AN EXEMPTION THEREFROM UNDER THE ACT AND THE RULES AND REGULATIONS THEREUNDER AND APPLICABLE STATE SECURITIES LAWS.**

Certificates or book-entry positions evidencing the Shares shall not be required to contain such legend or any other legend (i) following any sale of such Shares pursuant to an effective registration statement (including the Registration Statement described in Section 3.1) covering the resale of the Shares, (ii) following any sale of such Shares pursuant to Rule 144 or if the Shares are transferrable by a person who is not an Affiliate of the Company or the applicable Holder pursuant to Rule 144 without any volume or manner of sale restrictions thereunder, (iii) if Holder is not an Affiliate of the Company, six (6) months following the Closing, provided, however, that in the case of (i), (ii) and (iii), above, the Holder provides the Company with customary legal representation letters reasonably acceptable to the Company or (iv) if the Holder provides the Company with a legal opinion reasonably acceptable to the Company to the effect that the legend is not required under applicable requirements of the Securities Act. Whenever such restrictions shall cease and terminate as to any Shares, the Holder of such securities shall be entitled to receive from the Company upon a written request in writing, without expense, new securities of like tenor not bearing the legend set forth herein, and such new securities shall be issued promptly, but in no event less than five (5) Business Days after a written request to remove such legends.

(c) Notwithstanding anything herein to the contrary, following registration of the Shares, each Holder agrees not to sell any Shares issued to such Holder if the sales of such shares would, when combined with the sale of any other Shares by such Holder in any one (1) day period, exceed five percent (5%) of the average daily trading volume of the Company's common stock on the New York Stock Exchange over the five (5) trading days immediately preceding such date of sale; provided, however, that if the aggregate number of Shares represents less than fifty percent (50%) of the average daily trading volume of the Company's common stock on the New York Stock Exchange over the five (5) trading days preceding the Closing Date (as defined in the Merger Agreement) (the "**Average Volume**"), such resale volume limitations shall not apply. If the aggregate number of Shares issued to a Holder represents more than the Average Volume, the Company may place such legends or stock transfer restrictions on the Shares as shall be appropriate for enforcing the provisions of this Section 2(c).

**ARTICLE III  
REGISTRATION AND PROCEDURES**

**Section 3.1 S-3 Registration.**

(a) In compliance with the terms of this Agreement, the Company shall prepare and file with the SEC a registration statement on Form S-3ASR (or such other form that the Company is then eligible to use if not eligible to use Form S-3ASR) covering the resale as a secondary offering to be made on a continuous basis pursuant to Rule 415 of all Registrable Securities. The registration statement (or new registration statement) required to be filed pursuant to this Section 3.1, amendments and supplements to such registration statement, including post-effective amendments, all exhibits and all materials incorporated by reference in such registration statement other than a registration statement on Form S-4 or S-8, is referred to herein as the “**Registration Statement**.”

(b) The Company shall exercise commercially reasonable efforts to prepare and file the Registration Statement with the SEC no later than five (5) Business Days after the Closing Date; provided, however, that no filing of such Registration Statement shall be required during any period in which the Company’s insider trading policy would prohibit executive officers of the Company from trading in the Company’s securities. Subject to the terms of this Agreement, the Company shall use commercially reasonable efforts to have the Registration Statement declared effective as soon as practicable after such filing if not otherwise effective upon filing and to keep the Registration Statement continuously effective as promptly as practical and in compliance with the Securities Act and usable for resale of Registrable Securities covered thereby from the date of its initial effectiveness until one (1) year following the Closing Date (such period, the “**Effectiveness Period**”); provided, however, that nothing in this Agreement shall require the Company to maintain any Registration Statement once the Shares cease to be Registrable Securities.

(c) It shall be a condition precedent to the obligations of the Company to take any action pursuant to Section 3.1 or Section 3.2 with respect to Registrable Securities of a Holder that the Holder shall furnish to the Company such information regarding such Holder as required under Section 3.4(a).

**Section 3.2 Registration Procedures; Company Obligations.** The Company shall use commercially reasonable efforts to effect the registration of the Registrable Securities in accordance with Section 3.1, and in connection therewith shall have the following obligations:

(a) No later than the first Business Day after the Registration Statement becomes effective, the Company shall file with the SEC the final prospectus included therein pursuant to Rule 424. The Registration Statement, including any preliminary prospectus or final prospectus contained therein or any amendments or supplements thereto, shall comply as to form and content with the applicable requirements of the Securities Act and shall not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein, or necessary to make the statements therein, in light of the circumstances in which they were made (in the case of any prospectus), not misleading.

(b) Subject to Section 3.2(h), the Company shall prepare and file with the SEC such amendments and supplements to the Registration Statement and the prospectus used in connection with the Registration Statement as may be necessary to keep the Registration Statement effective and usable for resale of the Registrable Securities covered thereby at all times during the Effectiveness Period. The Company shall use commercially reasonable efforts to cause any post-effective amendment to the Registration Statement that is not effective upon filing to become effective as soon as practicable after such filing. No later than the first Business Day after a post-effective amendment to the Registration Statement becomes effective, the Company shall file with the SEC the final prospectus or prospectus supplement included therein pursuant to Rule 424.

(c) The Company shall as promptly as practicable notify the Holders of the time when the Registration Statement becomes effective or an amendment or supplement to any prospectus forming a part of such Registration Statement has been filed. The Company shall furnish to the Holders, without charge, such documents, including copies of any preliminary prospectus or final prospectus contained in the Registration Statement or any amendments or supplements thereto, as such Holder may reasonably request from time to time in order to facilitate the disposition of the Registrable Securities covered by the Registration Statement.

(d) The Company shall use commercially reasonable efforts to register or qualify, and cooperate with the Holders of Registrable Securities covered by the Registration Statement in connection with the registration or qualification of such Registrable Securities for offer and sale under the securities or “blue sky” laws of each state and other jurisdiction of the United States as any such Holder reasonably requests in writing, and do any and all other things reasonably necessary or advisable to keep such registration or qualification in effect; provided, however, that the Company shall not be required to qualify generally to do business in any jurisdiction where it is not then so qualified or take any action which would subject it to taxation or general service of process in any such jurisdiction where it is not then so subject.

(e) The Company shall promptly notify (which notice shall be accompanied by an instruction to suspend the use of the prospectus) the Holders when a prospectus relating thereto is required to be delivered under the Securities Act of the happening of any event as a result of which any prospectus included in, or relating to, the Registration Statement, as then in effect, includes an untrue statement of a material fact or omits to state a material fact required to be stated therein, or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading (provided that in no event shall such notice contain any material, non-public information), and, subject to Section 3.2(h), promptly prepare and file with the SEC a supplement to the related prospectus or amendment to such Registration Statement or any other required document so that, as thereafter delivered to the Holders, the prospectus will not contain an untrue statement of a material fact or omit to state any material fact required to be stated therein, or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading.

(f) The Company shall use commercially reasonable efforts to prevent the issuance of any stop order or other suspension of effectiveness of the Registration Statement, or the

suspension of the qualification of any of the Registrable Securities for sale in any jurisdiction and, if such an order or suspension is issued, to obtain the withdrawal of such order or suspension as soon as reasonably practicable and to notify the Holders of the issuance of such order and the resolution thereof or its receipt of actual notice of the initiation or threat of any proceeding for such purpose.

(g) The Company shall use commercially reasonable efforts to cause the Registrable Securities covered by the Registration Statement to be (1) listed on the New York Stock Exchange and (2) reflected in the stock ledger maintained by the Company's transfer agent.

(h) Notwithstanding anything in this Agreement to the contrary, at any time after the Registration Statement becomes effective the Company may delay the disclosure of material, non-public information concerning the Company or any of its subsidiaries if the Board of Directors of the Company has a valid business reason for determining that disclosure of such information is not in the best interests of the Company and such disclosure is not otherwise required (a "Grace Period"); provided, however, that the Company shall promptly (i) provide written notice to the Holders of the Grace Period (provided that in no event shall such notice contain any material, non-public information) and the date on which the Grace Period will begin, (ii) use commercially reasonable efforts to terminate a Grace Period as promptly as possible, and (iii) provide written notice to the Holders of the date on which the Grace Period ends; provided, further, that no Grace Period shall exceed thirty (30) consecutive days and during any twelve (12) month period such Grace Periods shall not exceed an aggregate of sixty (60) days; provided, further, the Company shall not register any securities for its own account or that of any other existing or prospective stockholder during such Grace Period. The provisions of Section 3.2(e) shall not be applicable during any Grace Period. Upon expiration of a Grace Period, the Company shall again be bound by the provisions of Section 3.2(e) with respect to the information giving rise thereto unless such material, non-public information is no longer applicable.

**Section 3.3 Current Public Information.** During the Effectiveness Period, the Company shall use commercially reasonable efforts to (i) make and keep public information available, as those terms are defined in Rule 144, until all the Registrable Securities cease to be Registrable Securities, and so long as a Holder owns any Registrable Securities, furnish to such Holder upon request a written statement by the Company as to its satisfaction of the current public information requirements of Rule 144 and (ii) file with the SEC in a timely manner all reports and other documents required to be filed by the Company under the Securities Act and the Exchange Act.

**Section 3.4 Obligations of the Holders.**

(a) Each Holder shall furnish in writing to the Company such information regarding such Holder, the Registrable Securities held by such Holder and the intended method of disposition of the Registrable Securities held by such Holder as shall be reasonably required to effect the registration of such Registrable Securities and shall execute, or shall cause to be executed, such customary documents in connection with such registration as the Company may reasonably request. In connection therewith, upon the execution of this Agreement, each Holder shall complete,

execute and deliver to the Company a selling securityholder notice and questionnaire in the form attached hereto as Exhibit B. At least five (5) Business Days prior to the first anticipated filing date of the Registration Statement, the Company shall notify each Holder of any additional information the Company requires from such Holder, and such Holder shall provide such information to the Company at least three (3) Business Days prior to the first anticipated filing date of the Registration Statement.

(b) Each Holder agrees to cooperate with the Company as reasonably requested by the Company in connection with the preparation and filing of the Registration Statement.

(c) Upon receipt of written notice from the Company of any event of the kind described in Section 3.2(e) or Section 3.2(f) or written notice of any Grace Period, each Holder shall forthwith discontinue disposition of Registrable Securities until such Holder has received copies of a supplemented or amended prospectus or until such Holder is advised in writing by the Company that the use of the prospectus may be resumed or that the Grace Period has ended. If so directed by the Company, such Holder shall use its commercially reasonable efforts to return to the Company (at the Company's expense) all copies of the prospectus covering such Registrable Securities current at the time of receipt of such notice other than permanent file copies then in such Holder's possession.

(d) No Holder shall use any free writing prospectus (as defined in Rule 405) in connection with the sale of Registrable Securities without the prior written consent of the Company.

(e) Each Holder covenants and agrees that it will comply with the prospectus delivery requirements of the Securities Act as applicable to it or an exemption therefrom in connection with sales of Registrable Securities pursuant to any Registration Statement.

**Section 3.5 Expenses of Registration.** All Registration Expenses incurred in connection with any registration, qualification or compliance hereunder shall be borne by the Company. All Selling Expenses in connection with the sale of any Registrable Securities shall be borne by the Holder(s) selling such Registrable Securities.

**Section 3.6 Transfer of Registration Rights.** The rights contained in Section 3.1 hereof to cause the Company to register the Registrable Securities, and the other rights set forth in this Article III, may be assigned or otherwise conveyed by any Holder to any transferee of the Registrable Securities if the Transfer was permitted under Article II and the transferee agrees with the Company in writing to be bound by this Agreement.

#### **ARTICLE IV INDEMNIFICATION AND CONTRIBUTION**

**Section 4.1 Indemnification.** In the event any Registrable Securities are included in the Registration Statement:

(a) The Company shall indemnify and hold harmless each Holder of Registrable Securities and such Holder's officers, directors, employees, partners, members, agents (including

brokers), representatives and Affiliates and each person, if any, who controls such Holder within the meaning of the Securities Act or the Exchange Act (each, a “**Holder Indemnitee**”), against any losses, claims, damages, liabilities or expenses to which they may become subject under the Securities Act, the Exchange Act or other federal or state law, insofar as such losses, claims, damages, or liabilities (or actions in respect thereof) arise out of or are based upon any of the following statements, omissions or violations (collectively, a “**Violation**”): (i) an untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, including any preliminary prospectus or final prospectus contained therein or any amendments or supplements thereto or any documents incorporated therein by reference, (ii) an omission or alleged omission to state therein a material fact required to be stated therein, or necessary to make the statements therein, in light of the circumstances in which they were made (in the case of any prospectus), not misleading, and (iii) a violation or alleged violation by the Company or its agents of any rule or regulation promulgated under the Securities Act or the Exchange Act applicable to the Company or its agents and relating to action or inaction required of the Company in connection with the Registration Statement, and the Company will pay to each such Holder Indemnitee, as accrued, any legal or other expenses reasonably incurred by he, she or it in connection with investigating or defending any such loss, claim, damage, liability, action or expense; provided, however, that the indemnification contained in this Section 4.1(a) shall not apply to amounts paid in settlement of any such loss, claim, damage, liability, action or expense if such settlement is effected without the consent of the Company (which consent shall not be unreasonably withheld, conditioned or delayed), nor shall the Company be liable for any such loss, claim, damage, liability, action or expense to the extent that it arises out of or is based upon a Violation which occurs (A) in reliance upon and in conformity with written information furnished by a Holder to the Company, (B) in connection with any failure of such person to deliver or cause to be delivered a prospectus made available by the Company in a timely manner, (C) in connection with any offers or sales effected by or on behalf of any Holder Indemnitee in violation of Section 3.4(c) of this Agreement, or (D) as a result of offers or sales effected by or on behalf of any Holder Indemnitee by means of a free writing prospectus (as defined in Rule 405) that was not authorized in writing by the Company. Such indemnity shall remain in full force and effect regardless of any investigation made by or on behalf of any such Holder Indemnitee, and shall survive the transfer of such securities by such Holder, and any termination of this Agreement.

(b) Each Holder, severally and not jointly, shall indemnify and hold harmless the Company and each of its officers, directors, employees, agents, representatives and Affiliates and persons, if any, who control the Company within the meaning of the Securities Act or the Exchange Act (each, a “**Company Indemnitee**”), against any losses, claims, damages, liabilities or expenses to which any of the Company Indemnitees may become subject under the Securities Act, the Exchange Act or other federal or state law, insofar as such losses, claims, damages, or liabilities (or actions in respect thereof) arise out of or are based upon any (i) untrue statement or alleged untrue statement of a material fact regarding such Holder and provided in writing by such Holder which is contained in the Registration Statement, including any preliminary prospectus or final prospectus contained therein or any amendments or supplements thereto, (ii) the omission or alleged omission to state therein a material fact required to be stated therein, or necessary to make the statements therein, in light of the circumstances in which they were made (in the case of any prospectus), not misleading, in each case to the extent (and only to the extent) that such untrue



statement or alleged untrue statement or omission or alleged omission was made in the Registration Statement, preliminary or final prospectus, amendment or supplement thereto, in reliance upon and in conformity with written information furnished by such Holder to the Company, (iii) a violation or alleged violation by a Holder of any rule or regulation promulgated under the Securities Act or the Exchange Act applicable to such Holder and relating to action or inaction required of such Holder in connection with the registration of such Holder's Registrable Securities or (iv) in connection with any offer or sales effected by or on behalf of such Holder in violation of Section 3.4(c) of this Agreement, and each Holder will pay, as accrued, any legal or other expenses reasonably incurred by any Company Indemnitee pursuant to this Section 4.1(b), in connection with investigating or defending any such loss, claim, damage, liability, action or expense as a result of a Holder's untrue statement or omission or violation; provided, however, that the indemnification contained in this Section 4.1(b) shall not apply to amounts paid in settlement of any such loss, claim, damage, liability, action or expense if such settlement is effected without the consent of such Holder (which consent shall not be unreasonably withheld, conditioned or delayed). Notwithstanding the foregoing, the amount any Holder will be obligated to pay pursuant to this Section 4.1(b) and Section 4.2 will be limited to an amount equal to the gross proceeds actually received by such Holder for the sale of the Registrable Securities pursuant to the Registration Statement which gives rise to such obligation to indemnify and/or contribute (less the aggregate amount of any damages which such Holder has otherwise been required to pay in respect of such loss, liability, claim, damage, or expense or any substantially similar loss, liability, claim, damage, or expense arising from the sale of such Registrable Securities). Such indemnity shall remain in full force and effect regardless of any investigation made by or on behalf of any such Company Indemnitee, and shall survive the transfer of such securities by such Holder, and any termination of this Agreement.

(c) Promptly after receipt by a party to this Agreement entitled to indemnity hereunder (an "**Indemnified Party**") under this Section 4.1 of notice of the commencement of any action (including any governmental action), such Indemnified Party will, if a claim in respect thereof is to be made against any party to this Agreement from whom indemnification may be sought under this Section 4.1 (an "**Indemnifying Party**"), deliver to the Indemnifying Party a written notice of the commencement thereof and the Indemnifying Party shall have the right to participate in, and, to the extent the Indemnifying Party so desires, jointly with any other Indemnifying Party similarly noticed, to assume the defense thereof with counsel reasonably satisfactory to the Indemnifying Party; provided, however, that an Indemnified Party (together with all other Indemnified Parties which may be represented without conflict by one counsel) shall have the right to retain one separate counsel, with the reasonable fees and expenses of such counsel to be paid by the Indemnifying Party, if (i) the Indemnifying Party shall have failed to assume the defense of such claim within seven (7) days after receipt of notice of the claim and to employ counsel reasonably satisfactory to such Indemnified Party, as the case may be; or (ii) in the reasonable opinion of counsel retained by the Indemnified Party, representation of such Indemnified Party by such counsel would be inappropriate due to actual or potential differing interests (including the availability of differing legal defenses) between such Indemnified Party and any other party represented by such counsel in such proceeding. It is understood that the Indemnifying Party shall not, in connection with any proceeding in the same jurisdiction, be liable for fees or expenses of more than one separate counsel at any time for all such Indemnified Parties. The Indemnified Party shall cooperate fully with the Indemnifying Party in connection with any negotiation or defense of any such action or claim by

the Indemnifying Party and shall furnish to the Indemnifying Party all information reasonably available to the Indemnified Party which relates to such action or claim. The Indemnifying Party shall keep the Indemnified Party reasonably apprised of the status of the defense or any settlement negotiations with respect thereto. No Indemnifying Party will, except with the consent of the Indemnified Party, consent to entry of any judgment or enter into any settlement that does not include as an unconditional term thereof the giving by the claimant or plaintiff to such Indemnified Party of a release from all liability in respect of such action or claim. No Indemnifying Party shall be liable for any settlement of any action, claim or proceeding effected without its prior written consent; provided, however, that the Indemnifying Party shall not unreasonably withhold, delay or condition its consent. The failure to deliver written notice to the Indemnifying Party within a reasonable time of the commencement of any such action shall not relieve such Indemnifying Party of any liability to the Indemnified Party under this Section 4.1, except to the extent such failure to give notice has a material adverse effect on the ability of the Indemnifying Party to defend such action.

**Section 4.2 Contribution.** If the indemnification provided for in Section 4.1 is held by a court of competent jurisdiction to be unavailable to an Indemnified Party with respect to any loss, liability, claim, damage, or expense referred to therein, then the Indemnifying Party, in lieu of indemnifying such Indemnified Party hereunder, shall contribute to the amount paid or payable by such Indemnified Party as a result of such loss, liability, claim, damage, or expense in such proportion as is appropriate to reflect the relative fault of the Indemnifying Party on the one hand and of the Indemnified Party on the other in connection with the statements or omissions that resulted in such loss, liability, claim, damage, or expense as well as any other relevant equitable considerations. The relative fault of the Indemnifying Party and of the Indemnified Party shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission to state a material fact relates to information supplied by the Indemnifying Party or by the Indemnified Party and the parties' relative intent, knowledge, access to information, and opportunity to correct or prevent such statement or omission. Notwithstanding the foregoing, the amount any Holder will be obligated to severally and not jointly contribute pursuant to this Section 4.2, together with Holder's liability under Section 4.1(b), will be limited to an amount equal to the gross proceeds received by a Holder for the sale of the Registrable Securities pursuant to the Registration Statement which gives rise to such obligation to contribute and/or indemnify (less the aggregate amount of any damages which such Holder has otherwise been required to pay in respect of such loss, liability, claim, damage, or expense or any substantially similar loss, liability, claim, damage, or expense arising from the sale of such Registrable Securities). No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) will be entitled to contribution hereunder from any person who was not guilty of such fraudulent misrepresentation.

## ARTICLE V GENERAL PROVISIONS

**Section 5.1 Entire Agreement.** This Agreement (including Exhibit A hereto) constitutes the entire understanding and agreement between the parties as to the matters covered herein and supersedes and replaces any prior understanding, agreement or statement of intent, in each case, written or oral, of any and every nature with respect thereto.

**Section 5.2 Notices.** Any notice or other communication required or permitted to be delivered to any party under this Agreement shall be in writing and shall be deemed properly delivered, given and received (a) upon receipt when delivered by hand, (b) upon transmission, if sent by facsimile or electronic transmission (in each case with receipt verified by electronic confirmation), or (c) one (1) Business Day after being sent by courier or express delivery service. The addresses, email addresses and facsimile numbers for such notices and communications are those set forth on the signature pages hereof, or such other address, email address or facsimile numbers as may be designated in writing hereafter, in the same manner, by any such person.

**Section 5.3 Counterparts.** This Agreement may be executed in one or more counterparts, all of which shall be considered one and the same agreement and shall become effective when one or more counterparts have been signed by each of the parties and delivered to the other parties, it being understood that all parties need not sign the same counterpart and such counterparts may be delivered by the parties hereto via facsimile or electronic transmission.

**Section 5.4 Amendment; Waiver.** This Agreement may be amended or modified, and any provision hereof may be waived, in whole or in part, at any time pursuant to an agreement in writing executed by the Company and Holders holding a majority of the Registrable Securities at such time. Any failure by any party at any time to enforce any of the provisions of this Agreement shall not be construed a waiver of such provision or any other provisions hereof.

**Section 5.5 Severability.** In the event that any provision of this Agreement or the application thereof becomes or is declared by a court of competent jurisdiction to be illegal, void or unenforceable, the remainder of this Agreement will continue in full force and effect and the application of such provision to other persons or circumstances will be interpreted so as reasonably to effect the intent of the parties hereto.

**Section 5.6. Governing Law; Venue.** This Agreement and all claims or causes of action (whether sounding in contract or tort) arising under or related to this Agreement, shall be governed by and construed in accordance with, the Laws of the State of Delaware, without regard to any rule or principle that might refer the governance or construction of this Agreement to the Laws of another jurisdiction. In any action or proceeding between any of the parties arising under or related to this Agreement, each of the parties (a) knowingly, voluntarily, irrevocably and unconditionally consents and submits to the exclusive jurisdiction and venue of the state or federal courts located in the City and County of San Francisco, California, and each of the Parties hereby irrevocably submits to the exclusive jurisdiction of the aforesaid courts, (b) agrees that all claims in respect of any such action or proceeding shall be heard and determined exclusively in accordance with clause (a) of this Section 5.6, (c) waives any objection to the laying of venue of any such action or proceeding in such courts, including any objection that any such action or proceeding has been brought in an inconvenient forum or that the court does not have jurisdiction over any party, and (d) agrees that service of process upon such party in any such action or proceeding shall be effective if such process is given as a notice in accordance with Section 5.2. The parties agree that any party may commence a proceeding in a court other than the above-named courts solely for the purpose of enforcing an order or judgment issued by one of the above-named courts.

**Section 5.7 Specific Performance.** Each party acknowledges and agrees that the other parties hereto would be irreparably harmed and would not have any adequate remedy at law in the event that any of the provisions of this Agreement were not performed by such first party in accordance with their specific terms or were otherwise breached by such first party. Accordingly, each party agrees that the other parties hereto shall be entitled to an injunction or injunctions to prevent breaches of this Agreement and to enforce specifically the terms and provisions of this Agreement, this being in addition to any other remedy to which such parties are entitled at law or in equity.

*(Next Page is Signature Page)*

IN WITNESS WHEREOF, each of the parties has executed this Agreement as of the date first written above.

**COMPANY:**

INVITAE CORPORATION

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address for Notice:

1400 16th Street  
San Francisco, California 94103

Attn: General Counsel

Facsimile No.:

[Signature Page to Registration Rights Agreement]

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IN WITNESS WHEREOF, each of the undersigned has executed this Agreement as of the date first written above.

**HOLDER:**

Name: \_\_\_\_\_

By: \_\_\_\_\_

Name:

Title:

Address for  
Notice: \_\_\_\_\_

Telephone No.: \_\_\_\_\_

Facsimile No.: \_\_\_\_\_

Email Address: \_\_\_\_\_

[Signature Page to Registration Rights Agreement]

**LIST OF SUBSIDIARIES OF INVITAE CORPORATION**

<b>Subsidiary</b>	<b>Jurisdiction</b>
Clear Genetics, Inc.	Delaware
CombiMatrix Corporation	Delaware
CombiMatrix Molecular Diagnostics, Inc.	California
Good Start Genetics, Inc.	Delaware
Jungla, LLC	Delaware
Invitae Australia PTY LTD	Australia
Invitae Canada Inc.	British Columbia, Canada
Invitae Israel, Inc.	Israel
Invitae Netherlands, BV	Netherlands
Ommdom Inc.	Delaware
PatientCrossroads, Inc.	California
Singular Bio, Inc.	Delaware

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the following Registration Statements:

- Registration Statements on Form S-3 (Nos. 333-220053, 333-220054 and 333-226756) of Invitae Corporation and the related prospectuses
- Registration Statements on Form S-3ASR (Nos. 333-230053, 333-233109, 333-233110 and 333-234768) of Invitae Corporation and the related prospectuses
- Registration Statement on Form S-4 (No. 333-220447) of Invitae Corporation, including any post-effective amendments thereto on Form S-3 or Form S-8
- Registration Statement on Form S-8 (No. 333-202066) pertaining to the 2015 Stock Incentive Plan, the Employee Stock Purchase Plan, and the 2010 Stock Incentive Plan of Invitae Corporation
- Registration Statements on Form S-8 (Nos. 333-216761, 333-223455 and 333-229972) pertaining to the 2015 Stock Incentive Plan and the Employee Stock Purchase Plan of Invitae Corporation
- Registration Statement on Form S-8 (No. 333-232208) pertaining to the 2015 Stock Incentive Plan of Invitae Corporation

of our reports dated February 28, 2020, with respect to the consolidated financial statements of Invitae Corporation and the effectiveness of internal control over financial reporting of Invitae Corporation included in this Annual Report (Form 10-K) of Invitae Corporation for the year ended December 31, 2019.

/s/ Ernst & Young LLP

Redwood City, California  
February 28, 2020



**PRINCIPAL EXECUTIVE OFFICER'S CERTIFICATION PURSUANT TO  
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Sean E. George, certify that:

1. I have reviewed this annual report on Form 10-K of Invitae Corporation;
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(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) 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: February 28, 2020

/s/ Sean E. George, Ph.D.

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Sean E. George, Ph.D.

*Chief Executive Officer (Principal Executive Officer) and Director*

**PRINCIPAL FINANCIAL AND ACCOUNTING OFFICER'S CERTIFICATION PURSUANT TO  
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Shelly D. Guyer, certify that:

1. I have reviewed this annual report on Form 10-K of Invitae Corporation;
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(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) 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: February 28, 2020

/s/ Shelly D. Guyer

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Shelly D. Guyer

*Chief Financial Officer (Principal Financial and Accounting Officer)*

**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 Invitae Corporation (the "Company") on Form 10-K for the year ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned officer of the Company certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to such officer's knowledge:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; 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: February 28, 2020

/s/ Sean E. George, Ph.D.

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Sean E. George, Ph.D.

*Chief Executive Officer (Principal Executive Officer) and Director*

**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 Invitae Corporation (the "Company") on Form 10-K for the year ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned officer of the Company certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to such officer's knowledge:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; 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: February 28, 2020

/s/ Shelly D. Guyer

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Shelly D. Guyer  
Chief Financial Officer (Principal Financial and Accounting Officer)