NanoString Technologies Inc
Form 10-K
March 11, 2019

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

FORM 10-K

ý ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2018
OR
¨ TRANSITION REPORT PURSUANT TO SECTION 13 Or 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from _____ to_____
Commission file number: 001-35980

NANOSTRING TECHNOLOGIES, INC.
(Exact name of registrant as specified in its charter)

Delaware	20-0094687
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification Number)

530 Fairview Avenue North
Seattle, Washington 98109
(Address of principal executive offices)
(206) 378-6266
(Registrant's telephone number, including area code)
Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Exchange on Which Registered
Common Stock, $0.0001 par value per share	The NASDAQ Stock Market LLC (The NASDAQ Global Market)

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 ý No ¨
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act Yes ¨ No ý
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 ý 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 during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ý No ¨

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

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

Large accelerated filer ¨ Accelerated filer ý

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). (Check one): Yes ¨ No ý

The aggregate market value of the voting and non-voting stock held by non-affiliates of the Registrant, based on the closing sale price of the Registrant's common stock on the last business day of its most recently completed second fiscal quarter, as reported on The NASDAQ Global Market, was approximately $295.2 million. Shares of common stock held by each executive officer and director and by each other person who may be deemed to be an affiliate of the Registrant, have been excluded from this computation. The determination of affiliate status for this purpose is not necessarily a conclusive determination for other purposes.

There were 31,085,236 shares of the Registrant's common stock, $0.0001 par value per share, outstanding on February 28, 2019.

DOCUMENTS INCORPORATED BY REFERENCE

None.

NANOSTRING TECHNOLOGIES, INC.
ANNUAL REPORT ON FORM 10-K
FOR THE FISCAL YEAR ENDED DECEMBER 31, 2018

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Special Note Regarding Forward-Looking Information

This Annual Report on Form 10-K, including the "Management's Discussion and Analysis of Financial Condition and Results of Operation" section in Item 7, and other materials accompanying this Annual Report on Form 10-K contain forward-looking statements that are based on our management's beliefs and assumptions and on information currently available. The statements contained in this Annual Report on Form 10-K that are not purely historical are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended.

Forward-looking statements can be identified by words such as "believe," "anticipate," "could," "continue," "depends," "expec "expand," "forecast," "intend," "predict," "plan," "rely," "should," "will," "may," "seek," or the negative of these terms and ot expressions, although not all forward-looking statements contain these words. You should read these statements carefully because they discuss future expectations, contain projections of future results of operations or financial condition, or state other "forward-looking" information. These statements relate to our future plans, objectives, expectations, intentions and financial performance and the assumptions that underlie these statements. These forward-looking statements include, but are not limited to:

- our expectations regarding our future operating results and capital needs, including our expectations regarding instrument, consumable and total revenue, operating expenses, sufficiency of cash on hand and operating and net loss;
- our ability to successfully launch and commercialize our Digital Spatial Profiling and Hyb & Seq platforms;
- the success, costs and timing of implementation of our business model, strategic plans for our business and future product development plans;
- the regulatory regime and our ability to secure and maintain regulatory clearance or approval or reimbursement for the clinical use of our products, domestically and internationally;
- our ability to realize the potential payments set forth in our collaboration agreements;
- our strategic relationships, including with patent holders of our technologies, manufacturers and distributors of our products, collaboration partners and third parties who conduct our clinical studies;
- our intellectual property position;
- our ability to attract and retain key scientific or management personnel;
- our expectations regarding the competitive position, market size and growth potential for our business; and
- our ability to sustain and manage growth, including our ability to expand our customer base, develop new products, enter new markets and hire and retain key personnel.

All forward-looking statements are based on information available to us on the date of this Annual Report on Form 10-K and we will not update any of the forward-looking statements after the date of this Annual Report on Form 10-K, except as required by law. Our actual results could differ materially from those discussed in this Annual Report on Form 10-K. The forward-looking statements contained in this Annual Report on Form 10-K, and other written and oral forward-looking statements made by us from time to time, are subject to certain risks and uncertainties that could cause actual results to differ materially from those anticipated in the forward-looking statements, and you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified time frame, or at all. Factors that might cause such a difference include, but are not limited to, those discussed in the following discussion and within Part I, Item 1A "Risk Factors" of this Annual Report on Form 10-K. In this report, "we," "our," "us," "NanoString," and "the Company" refer to NanoString Technologies, Inc. and its subsidiaries.

In addition, statements that "we believe" and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this Annual Report on Form 10-K, and although we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted a thorough inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and investors are cautioned not to unduly rely upon these statements.

PART I

Item 1. Business

Overview

We develop, manufacture and sell products that unlock scientifically valuable and clinically actionable information from minute amounts of biological material. Our core technology is a unique, proprietary optical barcoding chemistry that enables the labeling and counting of single molecules. This proprietary chemistry may reduce the number of steps required to conduct certain types of scientific experiments and allow for multiple experiments to be conducted at once. As a result, we are able to develop tools that are easier for researchers to use and that may generate faster and more consistent scientific results.

We use our technology to develop tools for scientific research, primarily in the fields of genomics and proteomics, and also to develop clinical diagnostic tests. We currently have one commercially available product platform, our nCounter Analysis System instruments and related consumables. nCounter can be used to analyze the activity of up to 800 genes in a single experiment. nCounter is also used by clinicians to analyze gene activity relevant for diagnostic applications. Our proprietary nCounter-based Prosigna assay analyzes the activity of 50 genes to assess the risk of recurrence in breast cancer patients previously treated with radiation therapy. As of December 31, 2018, we had an installed base of approximately 730 nCounter systems, which our customers have used to publish more than 2,300 peer-reviewed scientific papers.

We have discovered other novel applications that utilize our proprietary barcoding chemistry, and we have two new product platforms under development. Following completion of product development, each of these new systems is expected to be commercialized as a new instrument along with associated consumables.

The first new platform, our GeoMx Digital Spatial Profiling, or DSP system, is designed to enable the field of spatial genomics. While nCounter and other existing technologies analyze gene activity as a whole throughout the totality of a biological sample, GeoMx DSP is used to analyze specifically selected regions of a biological sample in order to see how gene activity or protein levels might vary across those regions or in certain cell types. In advance of the launch of the commercial version of GeoMx DSP, we have provided early access to the system's capabilities by offering selected customers the opportunity to send biological samples to our Seattle facility to be tested by us on prototype instruments. To date, we have conducted over 70 projects for approximately 50 customers pursuant to this Technology Access Program, or TAP. In addition, in the third quarter of 2018 we announced the GeoMx Priority Site, or GPS, Program. The GPS Program is designed to provide customers the opportunity to be among the first to receive a GeoMx DSP instrument following its commercial launch, as well as advanced service and support. Inclusion in the GPS Program has also provided researchers the opportunity to begin generating data on samples through our TAP service. As of December 31, 2018, we have received over 30 orders for GeoMx DSP pursuant to our GPS Program. The full commercial launch of GeoMx DSP instruments and consumables is expected to commence during the first half of 2019, with installations of commercial instruments expected to commence in the second half of 2019.

The second new platform, our Hyb & Seq molecular profiling system, is designed to use a modified version of our proprietary chemistry to determine and analyze gene sequences within a biological sample, or to potentially profile the activity of an even greater number of genes as compared to our nCounter Analysis System. Hyb & Seq is designed to determine gene sequences using a work flow with fewer steps as compared to currently available gene sequencing technologies. Hyb & Seq is expected to become commercially available during 2021.

New discoveries in genetics have generated a significant amount of scientific information and medical advancement. The decoding of the human genome, and the subsequent generation of large amounts of gene sequence data, has led to the emergence of pathway-based biology whereby researchers seek to understand how networks of genes may work together to produce a biological function or condition. The desire to interpret gene sequence data and map biological pathways has led to demand for technologies that can precisely and efficiently measure the activation state of hundreds of genes simultaneously.

Demand for these new or improved technologies has been driven by researchers in disease areas such as cancer, immunology and neurology. Researchers in these fields are increasingly attempting to determine which sequences of genes or mutations are important in disease-related biological pathways so that new potential treatments might be developed. For example, in the field of cancer, researchers and clinicians have learned that cancer cell behavior is impacted by multiple genes and proteins, and that analysis of these factors together may be important in determining

whether or not a cancer might be responsive to a certain treatment. In addition, more cancers are being detected earlier and tumor samples are becoming smaller and smaller. Tumor samples are often stored in a format known as formalin-fixed paraffin embedded, or FFPE, which complicates subsequent analysis of genetic material. Researchers and clinicians may face similar challenges with analysis of biological samples in other therapeutic areas of interest. Our proprietary chemistry, which has been incorporated into our nCounter product platform and our two product platforms in development, addresses many of the fundamental challenges of genetic and molecular profiling and biological

pathway research. The sensitivity and precision of our chemistry allows the measurement of subtle changes in the activity of multiple genes from minute amounts of a biological sample. Our chemistry is particularly compatible with FFPE, increasing its popularity among cancer researchers. Our chemistry also supports product configurations that are easy to use with simple workflow as compared to many other scientific platforms used for genetic and proteomic research, including absence of library preparation and amplification steps that can be cumbersome or time consuming or that may introduce the possibility of measurement errors. The sensitivity and workflow efficiency of our product platforms also allows for testing of many different samples in a single day, enabling our products to be potentially useful in hospital or similar settings to conduct clinical diagnostic tests.

We market and sell our systems and related consumables to researchers in academic, government and biopharmaceutical laboratories for research use and to clinical laboratories and medical centers for diagnostic use, both through our direct sales force and through selected distributors in certain international markets. We generated revenue of $106.7 million, $114.9 million, and $86.5 million in 2018, 2017, and 2016, respectively, while incurring net losses of $77.4 million, $43.6 million, and $47.1 million in 2018, 2017, and 2016, respectively.

We are organized as, and operate in, one reportable segment. For additional information, see Note 2 of the Notes to Consolidated Financial Statements under Item 8 of this report. For financial information regarding our business, see Part II, Item 7 “Management’s Discussion and Analysis of Financial Condition and Results of Operations” of this report and our audited consolidated financial statements and related notes included elsewhere in this report.

We were incorporated in Delaware in June 2003. Our principal executive offices are located at 530 Fairview Avenue, North, Seattle, Washington 98109 and our telephone number is (206) 378-6266. Our common stock trades on The Nasdaq Global Market under the symbol “NSTG.”

This Annual Report on Form 10-K includes our trademarks and registered trademarks, including “NanoString,” “NanoString Technologies,” “nCounter,” “Prosigna,” “nCounter Elements,” “nCounter SPRINT,” “Vantage 3D,” “3D Biology “Hyb & Seq,” and “GeoMx.” Each other trademark, trade name or service mark appearing in this Annual Report on Form 10-K belongs to its holder.

Our Market Opportunity

Every living organism has a genome that contains a full set of biological instructions required to build and maintain life. A gene is a specific set of instructions embedded in the DNA of a cell. For a gene to be “turned on,” or “expressed,” the cell must first transcribe a copy of its DNA sequence into molecules of messenger RNA. Then, the cell translates the expressed information contained in the RNA into proteins that control most biological processes. In addition to the translated RNAs, there are many types of non-coding RNAs that are involved in many cellular processes and the control of gene expression, including microRNA, or miRNA.

By analyzing the variations in genomes, genes, gene activity or expression and proteins in and between organisms, researchers can determine their functions and roles in health and disease. An improved understanding of the genome and its functions allows researchers to drive advancements in scientific discovery. As they make scientific discoveries, researchers have been able to translate some of these findings into clinical applications that improve patient care.

Biological pathways are the networks of tens or hundreds of genes that work together to produce a biological function. Understanding the activation state of pathways and disruptions in individual elements provides significant insight into the fundamental basis of health and disease and facilitates data driven treatment decisions. As a result, pathway-based biology has become a widely adopted paradigm that researchers use to understand biological processes and has assisted them in the development of diagnostic tests and drugs to treat disease.

Understanding biological pathways has become particularly important in cancer research and treatment. Cancer is a disease generally caused by genetic mutations in cells. The behavior of cancer cells is extremely complex and depends on the activity of many different genes and proteins. It is often impossible for researchers to identify a single gene or protein that adequately predicts a more or less aggressive type of cancer. In some cases, researchers have been able to identify more or less aggressive types of cancer through gene expression analysis of biological pathways, enabling oncologists to determine which specific treatments are most likely to be effective for an individual patient, monitor a patient’s response to those treatments and determine the likelihood of recurrence. Recently cancer researchers, in part based on their research of biological pathways and gene expression, have begun to demonstrate the potential of harnessing a patient’s immune system to fight cancer. A new class of therapeutics, referred to generally as immuno-oncology drugs, have begun to come to market with the promise of long-term remissions, or even cures, in

certain types of cancer.

As interest in understanding biological pathways that may be relevant to medicine has increased, academic, government and biopharmaceutical company researchers have aspired to perform analyses of a larger number of genes and samples and are seeking new methods of interrogation that would allow them to:

- increase the number of molecular targets that can be analyzed simultaneously in order to understand the complete biological pathway involving multiple genes;
- provide more reliable, precise and reproducible data about targeted genes and biological pathways;
- maximize the amount of biologic information extracted from precious tissue or other biological samples;
- minimize the computational intensity of complex genomic and proteomic analysis;
- process difficult-to-work-with specimens, such as tumor biopsies stored in FFPE format;
- improve the overall efficiency of their laboratories by simplifying workflow and accelerating the rate of successfully completing their research; and
- create more systematic and reliable ways to help transition their research discoveries into future clinical products.

The interest in new methods of interrogation has led to the development of new research technologies. The newest technologies to experience rapid adoption have been focused primarily on determining the sequence of a person's or organism's DNA, in order to assess how differences among individuals might be predictive of certain aspects of health or disease. In particular, a technology known as next generation sequencing, or NGS, has become widely adopted. In recent years NGS use has accelerated, as the technology has improved and the cost to sequence DNA using NGS has declined. As of December 31, 2018, there were approximately 18,000 NGS systems installed in laboratories globally. While NGS has revolutionized researchers' ability to generate gene sequence data rapidly and cost effectively on large numbers of biological samples, other aspects of examining biological pathways are still done using legacy techniques or new technologies that have proved less capable of providing multiplexed experimentation, ease of use and low cost. Together with determining a gene sequence via NGS, pathway-based research requires further analysis of the activity of multiple genes and sensitivity to small changes in expression, which can be challenging for traditional scientific tools.

Researchers interested in multiplex gene expression or biological pathway analysis have traditionally performed experiments using microarrays or quantitative polymerase chain reaction, or qPCR, and protein expression experiments using flow cytometry, mass spectrometry, immunohistochemistry or enzyme-linked immunosorbent assay, or ELISA, assays. These techniques have been available for decades, and while suitable for analyzing the expression of a smaller number of genes may not be cost effective or scalable enough to study biological pathways. While these types of experiments could be repeated to analyze expression of multiple genes, they are often destructive of biological samples, creating limitations given the amounts of biological sample that may be available. These types of experiments may also involve library preparation and amplification steps that can be cumbersome or time consuming or that may introduce the possibility of measurement errors.

More recently, RNA sequencing, or RNA-Seq, which is done using NGS technology, has enabled researchers to look at the entirety of the gene expression within a single sample, and enhanced researchers' ability to discover patterns of gene expression that have biological meaning. NGS systems have a more complex and time-consuming workflow than traditional methods of analyzing gene or protein expression however, and RNA-Seq generates large amounts of data that may be expensive to store and may not have relevance to the scientific question being explored.

In both life sciences research and clinical medicine, there is a growing need for improved technologies that can precisely and rapidly measure the activation state of hundreds of genes simultaneously across a large number of precious samples. Furthermore, there is an untapped opportunity for technologies capable of simultaneously profiling the activity of genes and related proteins, which ultimately dictate biological activity.

Our Solution

We believe our proprietary chemistry and product platforms provide novel features that address the challenges and technology needs of researchers working to analyze and interpret the increasing amounts of data being generated by NGS and understand biological pathways. Our products support experiments that typically take fewer steps as compared to traditional techniques, perform multiplexed experiments in a single run and have been shown to generate consistent and accurate results from a variety of biological samples, including FFPE imbedded cancer tissue.

Our technology and product platforms offer a number of compelling advantages, including:

- Optimized for Pathway-Based Biology and Development of Multiplexed Biomarkers. Our nCounter Analysis System can profile the activity of up to 800 genes in a single experiment, which allows customers to analyze interactions among hundreds of genes or proteins that mediate biological pathways. Our GeoMx DSP System is designed to enable the multiplex profiling of protein and RNA targets in specifically selected regions of a biological sample.

- Digital Precision. Our molecular barcodes hybridize directly to target molecules in a sample, allowing them to be counted. This generates digital data (1 molecule = 1 count) of excellent quality over a wide dynamic range of measurements and provides excellent reproducibility.
- Simple Workflow. Our systems are designed to offer minimal sample preparation and automated workflow, which enables the simultaneous analysis of hundreds of genes and proteins in approximately 24 hours between the time a

sample is loaded and results are obtained. Our systems can generate data that customers can evaluate without the use of complex bioinformatics.

- Flexible Sample Requirements. Our systems are designed to unlock biologic information from minute amounts of a variety of challenging tissue samples, including FFPE samples, cell lysates and single cells.
- Efficient Sample Requirements. Our systems also can generate scientific results using very small amounts of biological material, which may be important in settings, such as pharmaceutical product development, where multiple researchers may desire access to samples.
- Versatility. The FLEX configuration of our nCounter Analysis System provides clinical laboratories a single platform with the flexibility to support both clinical testing, by running Prosigna or Laboratory Developed Tests, and research, by processing translational research experiments and multiplexed assays using our research reagents.

Our Products and Technology

We currently have one commercially available product platform based on our technology, our nCounter Analysis System and related consumables. We also have two new product platforms under development enabled by our technology, our GeoMx DSP system and our Hyb & Seq molecular profiling system.

nCounter Analysis System

Our nCounter Analysis System is an automated, multi-application, digital detection and counting system which directly profiles hundreds of molecules simultaneously, using our proprietary optical barcoding chemistry that is powerful enough for use in research, yet simple enough for use in clinical laboratories. Our nCounter Analysis System is based on automated instruments that prepare and analyze tissue samples using proprietary reagents, which can only be obtained from us. Our research customers purchase instruments from us and then purchase our reagents and related consumables for the specific experiment they wish to conduct. Our clinical laboratory customers typically purchase instruments from us and also purchase our reagents and related consumables, including Prosigna, for tests that they intend to run.

Our nCounter Analysis System is capable of supporting a number of applications including:

- Gene Expression. Researchers can use the nCounter Analysis System to measure the degree to which individual genes in pathways are turned “on” or “off” by simultaneously quantifying the amount of messenger RNA, or mRNA, associated with each of up to 800 genes.
- Protein Expression. Today, researchers can use the nCounter Analysis System to simultaneously measure up to 30 proteins. Ultimately, we intend to expand this capability to an increased number of protein targets, limited only by the 800 target capacity of an assay and the number of antibodies that can be sourced and combined without cross-reaction.
- Gene Mutations. In late 2016, we launched our first assay to detect a particular type of gene mutation, known as single nucleotide variations. Our initial panel, targeting solid tumors, gives researchers the power to measure 104 different gene mutations simultaneously, at the same time as measuring the expression of other genes and proteins.
- miRNA Expression. Researchers can use the nCounter Analysis System to measure the simultaneous expression levels of up to 800 different miRNAs. The nCounter Analysis System is capable of highly multiplexed, direct digital detection and counting of miRNAs in a single reaction without amplification, thereby delivering high levels of sensitivity, specificity, precision, and linearity.
- Copy Number Variation. Researchers can use the nCounter Analysis System to probe for structural variations that result in cells having an abnormal number of copies of one or more sections of the DNA. Researchers are able to conduct large-scale, statistically-powered studies of these copy number variations by leveraging the nCounter Analysis System’s multiplexing capacity to assay up to 800 DNA regions in a single tube, with as little as 300 ng of DNA.
- Gene Fusions. Researchers can use the nCounter Analysis System to detect gene fusion events that occur when one gene fuses to another gene. A number of design options are available for developing assays for these complex structural variants which have been shown to be important in a number of cancers.
- Molecular Diagnostics. Our nCounter Analysis System has the ability to simultaneously quantify gene expression on tens or hundreds of genes from minimal amounts of FFPE tissue, which makes it well suited for profiling pathway activation in tumor samples. Identifying whether certain genes are active in a biological sample may prove useful in the diagnosis of disease or disease progression, or in determining whether a certain drug therapy may be more or less

effective in a given patient. In addition, nCounter has the precision, reproducibility, and simple workflow required of technologies used in clinical laboratories.

nCounter Instrument Platforms

We currently offer three versions of our nCounter analysis system for commercial sale. In 2008, we began marketing a research use only version of the system, and since that time we have expanded our product line to include three instruments, each targeted at a distinct user segment. Our nCounter SPRINT is designed to appeal to individual researchers running relatively smaller experiments. Our nCounter MAX is a higher throughput instrument with features appealing to larger core laboratories serving multiple researchers. Our nCounter FLEX, which is targeted toward clinical laboratories, is a version of our MAX system that has been 510(k) cleared by the FDA and CE marked by European regulatory authorities. nCounter FLEX is enabled to run our proprietary Prosigna breast cancer assay, as well as other proprietary or laboratory developed tests, or LDTs, that may be developed.

	nCounter SPRINT	nCounter MAX	nCounter FLEX
Target customer	Individual researchers	Core research labs	Clinical labs
Throughput (samples per day)	24	48	48
Expandable with additional prep station [(1)]	No	Yes	Yes
Diagnostic menu	No	No	Yes
U.S. list price	$149,000	$235,000	$265,000

(1) nCounter MAX and FLEX throughput may be increased to up to 96 samples per day by adding a second prep station.

The nCounter MAX and FLEX systems comprise a Prep Station and a Digital Analyzer. The Prep Station is the automated liquid handling component that processes samples after they are hybridized and prepares the samples for data collection on the Digital Analyzer. The Digital Analyzer collects data from samples by taking images of the immobilized fluorescent reporters in the sample cartridge and processing the data into output files, which include the target identifier and related count numbers along with a broad set of internal controls that validate the precision of each assay. The nCounter MAX and FLEX systems employ a simple three-step workflow that takes approximately 24 hours and requires approximately 15 minutes of hands-on time by the user. When run in research mode, a user can process up to 48 samples per day by installing one Prep Station with a single Digital Analyzer. One can increase the number of samples analyzed to 96 samples per day on a single Digital Analyzer if it is coupled with two Prep Stations. This throughput can be quadrupled using sample multiplexing for experiments targeting 200 genes or fewer. For Prosigna, a clinical laboratory can process up to 30 samples per day on an nCounter FLEX system. The nCounter FLEX system was designed and is manufactured under ISO 13485:2003, the current quality standard for in vitro diagnostic platforms and medical devices.

The nCounter SPRINT Profiler is a single instrument targeted to individual researchers that combines the liquid handling steps and the digital analysis through use of a special microfluidic cartridge. The nCounter SPRINT Profiler employs an even more streamlined two-step workflow that requires only 10 minutes of hands-on time by the user and can process up to 24 samples per day.

nCounter instrument platforms also include our nSolver Analysis Software, a data analysis program that offers researchers the ability to quickly and easily quality check, normalize, and analyze their data without having to use any additional software for data analysis. The FLEX system, in addition to running any of our research applications, can also be enabled with software that runs Prosigna to generate individualized patient reports.

nCounter Consumables

All three nCounter instruments are capable of running our research consumable products and provide comparable, high-quality data. The majority of our nCounter consumables sold are standardized off-the-shelf “panel” products that represent important gene signatures for certain disease areas, and also include our proprietary Prosigna breast cancer assay. nCounter consumables can also be customized to a specific set of genes at a customer’s request.

Panels

We offer more than 30 gene expression and analysis panels for use with a broad range of sample types and species, including human, mouse, non-human primate and other. These pre-manufactured CodeSets include highly-curated content relevant to a particular research area. In certain cases, nCounter panels may be partially customized to address individual research interests with the purchase of an optional Panel Plus CodeSet. Our most significant current nCounter panel offerings include:

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Pan Cancer Gene Expression Panels. A portfolio of panels designed to comprehensively analyze genes driving the growth of cancer cells, the immune system’s response, and the progression of the cancer, including:

- Pathways. A novel set of 770 essential genes representing the signaling pathways implicated in cancer, including key driver genes, selected using a data-driven approach to identifying the genes most relevant to cancer biology.
- Immune Profiling. A novel set of 770 genes designed in collaboration with cancer immunologists around the globe, combining markers for 24 different immune cell types and populations, 30 common cancer antigens and genes that represent all known categories of immune response including key checkpoint blockade genes.
- Progression. A novel set of 770 genes addressing the key questions of what happens when cancer metastasizes, including genes for the study of angiogenesis, epithelial mesenchymal transition, extracellular matrix formation, and metastasis.
- PanCancer RNA: Protein Immune Profiling Panels. Two panels that combine gene expression analysis of the 770 genes contained in the PanCancer Immune Profiling Gene Expression Panel with the analysis of up to 30 proteins of interest in measuring the immune system’s response to cancer or intracellular signaling.
- 360 Gene Expression Panels. These panels include our IO 360 and Breast Cancer 360 and represent a series of next generation panels that combine clinically actionable content for evaluating the tumor microenvironment and immune response along with validated signatures such as the Company's Tumor Inflammation Signature and PAM 50 (breast cancer subtyping) along with up to 30 additional signatures encompassing all aspects of the cancer. These panels may be combined with our 360 Data Analysis Service to provide access to propriety signature algorithms.
- CAR-T Characterization Panel. A new panel developed in collaboration with leaders in the CAR-T field for use throughout the CAR-T workflow (development, manufacturing and monitoring post-infusion clinical trials). The panel represents a step toward standardization by providing molecular characterization for 8 essential components of CAR-T biology using 780 genes with a customizable feature to allow for measurement of the transgene insert that creates the CAR-T cell.
- Neuropathology and Neuroinflammation Gene Expression Panels. Two panels built in collaboration with leading drug developers, have been designed to address the growing biomarker needs in the field of neuroscience. These panels, which analyze approximately 770 genes profile mechanisms for neurodegenerative diseases as well as neuropsychiatric disorders.
- Mouse-AD Panel. A new panel developed for use with Alzheimer’s Disease, or AD, research in mouse models. The panel, created in collaboration with The Jackson Laboratories and MODEL-AD Consortium allows for more reliable pre-clinical translational studies by incorporating gene content for 30 clinically derived AD associated gene modules for measuring AD phenotypes and disease progression that were discovered as part of a consortium study of human brain tissue.
- Autoimmune Disease Gene Expression Panels. Two panels created to address the specific challenges of autoimmune disease research and assist with the understanding of the underlying mechanisms of autoimmune disease and for identification of potential responders and non-responders to drug treatments.
- miRNA Expression Panels. A family of panels that provide a cost-effective profiling solution capable of highly multiplexed, direct digital detection and counting of up to 800 miRNAs in a single reaction without amplification.

Custom CodeSets

We work with our customers to design and develop custom gene expression CodeSets to enable them to evaluate specific genes that are the subject of their study. Our customers provide us a list of targets for which we subsequently build a unique CodeSet to their specifications. Our design process leverages full length sequences for the DNA or RNA molecules that our customers are interested in detecting and prevents cross hybridization to non-target molecules in the sample. The custom CodeSet design process occurs in four distinct steps: (1) the customer selects the genes of interest, (2) we design probes and provide a design report to the customer, (3) the customer reviews and approves the design report, and (4) we manufacture, test and ship the CodeSet to the customer. The manufacturing process typically takes from three to five weeks, depending on the number of genes targeted and samples to be processed by the customer.

Master Kits, Cartridges and Reagents

For our nCounter MAX or FLEX systems, the Master Kit includes all of the ancillary reagents and plasticware required for our customers to be able to setup and process samples in the nCounter Prep Station and nCounter Digital Analyzer. The components of the Master Kit include the sample cartridge, strip tubes, tips, buffers, and reagent plates. For our nCounter SPRINT Profiler, customers purchase microfluidic cartridges and separate bottles of reagents which

together provide the ancillary components for processing samples with CodeSets and Panels.

Molecular Diagnostics

Our nCounter Analysis System has the ability to simultaneously quantify gene expression on tens or hundreds of genes from minimal amounts of FFPE tissue, which makes it well-suited for profiling pathway activation in tumor samples. In addition, it has the precision, reproducibility, and simple workflow required of technologies used in clinical laboratories. Our clinical laboratory customers use the nCounter Analysis System and in vitro diagnostic kits to provide clinical diagnostic services. Currently, Prosigna is the only in vitro diagnostic kit available for use on our nCounter Analysis System. Over time, we intend to develop, obtain regulatory authorization for, and sell additional in vitro diagnostic kits.

We believe that the attributes that make the nCounter Analysis System attractive to researchers also make the system attractive to hospitals and clinical laboratories that desire to conduct molecular diagnostic tests. We believe the precision, ease of use and flexibility of the nCounter Analysis System may allow medical technicians to conduct complex molecular diagnostic tests with minimal training. Our clinical laboratory customers use the nCounter FLEX system and in vitro diagnostic kits to provide clinical diagnostic services. Currently, Prosigna is the only in vitro diagnostic kit available for use on our nCounter FLEX system. We have one additional in vitro diagnostic test, our proprietary LymphMark assay, under development pursuant to a collaboration with Celgene Corporation, or Celgene.

- Prosigna. Prosigna, our first in vitro molecular diagnostic test, is based on a collection of 50 genes known as the PAM50 gene signature, which was discovered by several of our research customers. Prosigna can provide a breast cancer patient and physician with a subtype classification based on the fundamental biology of the patient's tumor, as well as a prognostic score that indicates the probability of cancer recurrence over 10 years. Physicians use Prosigna to help guide therapeutic decisions so that patients receive a therapeutic intervention, such as chemotherapy, only if clinically warranted. Prosigna is regulated as an in vitro diagnostic test and we distribute it as a kit for use on our nCounter FLEX system in clinical laboratories. In September 2013, we received 510(k) clearance from the FDA to market in the United States a version of Prosigna providing a prognostic indicator for distant recurrence-free survival at 10 years, which is indicated for postmenopausal women with Stage I/II lymph node-negative or Stage II lymph node-positive (one to three positive nodes) hormone receptor-positive breast cancer who have undergone surgery in conjunction with locoregional treatment consistent with standard of care. For each patient, the Prosigna report includes the Prosigna Score, which is referred to as the ROR Score in the scientific literature and outside the United States, and a risk category based on both the Prosigna Score and nodal status. Node-negative patients are classified as low, intermediate or high risk, while node-positive patients are classified as low or high risk. Prosigna competes with other tests that are currently available as services from specialized central laboratories. In September 2012, we obtained CE mark designation for Prosigna for use as a semi-quantitative in vitro diagnostic assay using the gene expression profile of cells found in FFPE breast tumor tissue to assess the 10-year risk of distant recurrence in postmenopausal women with HR+ early stage breast cancer treated with endocrine therapy alone. This CE-marked product is indicated for use in patients with either node-negative or node-positive disease and provides physicians and their patients with the intrinsic subtype of a patient's breast cancer tumor, ROR score, and risk category (high/intermediate/low). In early 2013, we began marketing this test in Europe and Israel. We sell Prosigna kits to our lab customers on a fixed dollars-per-kit basis. These customers are responsible for providing the testing service and contracting and billing payors. Accordingly, we are not directly exposed to third-party payor reimbursement risk.
- LymphMark. Our proprietary LymphMark assay, an in vitro molecular diagnostic test candidate under development, is intended to identify the cell-of-origin subtype of a tumor for patients with diffuse large B-Cell lymphoma, or DLBCL, a form of blood cancer. LymphMark is designed to aid in the disease characterization of patients newly diagnosed with DLBCL to support disease management in conjunction with other clinical and pathological information. DLBCL is a heterogeneous group of cancers that represents the most common form of Non-Hodgkin Lymphoma. According to the National Cancer Institute, there were approximately 70,000 new cases of Non-Hodgkin Lymphoma in the United States in 2015. DLBCL is the most common type of Non-Hodgkin Lymphoma, representing approximately 1 out of every 3 cases. The subtypes of DLBCL have long been known to have varying prognoses. In January 2014, certain of our research customers published a paper in the journal Blood describing the development and validation of a biomarker assay based on a 20-gene expression DLBCL subtype classifier using our nCounter Analysis System. LymphMark is currently being specifically investigated as an aid for identifying DLBCL patients that may be most likely to benefit from treatment with Celgene's drug REVLIMID. Under our collaboration with

Celgene, we have delivered an in vitro companion diagnostic test that was used to subtype and screen patients who enrolled in a pivotal study of REVLIMID for the treatment of DLBCL. The results of Celgene's study are expected to be announced in 2019, after which we may file for regulatory approval with the FDA to market and sell LymphMark.

- Laboratory Developed Tests. Clinical laboratories can use our custom manufacturing services to supply reagents to create LDTs, which are diagnostic tests that are developed, validated and performed by a single laboratory. These reagents enable assays for gene expression, copy number variation and gene fusions. Clinical laboratories can use

these reagents to develop assays to replace tests currently performed using fluorescence-based in situ hybridization, or FISH.

GeoMx DSP

Our second product platform, GeoMx DSP, is currently under development. Our GeoMx DSP system is designed to enable the field of spatial genomics.

nCounter and other existing technologies typically analyze gene activity throughout the totality of a biological sample, using “grind and bind” approaches that analyze average gene expression levels across an entire sample. GeoMx DSP is designed to allow researchers to explore and quantify how the activity of large numbers of proteins or genes vary spatially in different selected regions of interest across the landscape of a heterogeneous tissue biopsy, retaining spatial information and providing high-plex assays that target different regions in the same sample.

The commercial launch of the GeoMx DSP instrument and consumables is expected to commence during the first half of 2019, with installations of commercial instruments expected to commence in the second half of 2019.

Many of the current technologies used to analyze gene activity in selected parts of a biological sample are many decades old. These technologies include primarily immunohistochemistry, or IHC, which is used to estimate amounts of protein, and in-situ hybridization, or ISH, which is used to estimate amounts of RNA. Both IHC and ISH typically use stains that provide the ability to identify typically less than four proteins or RNAs based on assigned colors. The colors aid researchers in identifying where certain proteins or RNA may reside in a sample and provide a visual approximation of amounts. These techniques are limited however in their ability to only look at four proteins or RNAs at a time, with no ability to precisely quantify the amounts present in any given region or cell type. These limitations may lead to misleading or incomplete scientific conclusions as to the most relevant biological pathways in any given sample.

GeoMx DSP is designed to allow researchers to address important questions regarding how protein and gene expression vary spatially across multiple specific regions of interest across the landscape of a heterogeneous tissue biopsy. Our GeoMx DSP instruments are expected to image slide-mounted tissue biopsies, allow selection of regions of interest, and automate the preparation of samples from selected regions for molecular profiling using either an nCounter system or NGS. GeoMx DSP technology is expected to offer a number of advantages compared to traditional technologies, including the ability to profile a larger number of different genes or proteins in each region, more flexibility on the selection of regions, and processing of a larger number of samples per day.

GeoMx DSP Instrument

Our GeoMx DSP instruments use specialized optics and software to image slide-mounted tissue biopsies that have been prepared using IHC or ISH technology that is typically available in research or commercial laboratories. GeoMx then allows a researcher to select regions of interest for analysis on screen, and then prepares samples from selected regions of interest for molecular profiling using either an nCounter system or next generation gene sequencer.

GeoMx DSP Consumables

The initial portfolio of GeoMx DSP consumables at launch is expected to focus on protein and RNA analysis for immuno-oncology applications, and protein analysis for neurobiology applications. GeoMx DSP consumables expected to be available at the commercial launch date will be designed to support the profiling of biological activity, after regions of interest have been identified and samples have been prepared using GeoMx DSP, using our nCounter Analysis System. We have additional GeoMx DSP consumable products under development that are expected to enable profiling of larger numbers of RNA in selected regions of interest using an NGS system. We expect these NGS-enabled consumable products to be commercially available in 2020.

GeoMx DSP consumable products are currently designed as standardized panel products that represent important content for certain disease areas, with an initial “core” panel offered for purchase, and an option for researchers to add content to that core depending on the area of interest or desired number of targets for analysis. Our initial GeoMx DSP consumable product offering is expected to include:

- Immuno-Oncology Panels. An immuno-oncology-focused panel menu that is expected to comprise up to 90 protein targets and 84 RNA targets for analyzing the tumor and tumor microenvironment compartments in human tissue samples. The standard or core panel offering is expected to comprise of 20 targets, and researchers will then have the option of adding over 40 additional targets for analysis, with sets of additional targets focused on specific applications such as immuno-oncology drug target proteins, or human immune activation proteins. We also expect to offer panel

content to allow for the analysis of up to 84 immune pathways RNA. Additionally, 30 protein targets are expected to be released for analyzing mouse samples for pre-clinical applications.

- Neurobiology Panels. A neurobiology-focused menu that is expected to comprise up to 40 protein targets to profile neural cells in human tissue. The standard or core panel offering is expected to comprise of 20 targets, and researchers will then have the option of adding up to 20 additional targets for analysis, with sets of additional targets focused on specific applications such as proteins implicated in AD or Parkinson's disease.

Hyb & Seq Molecular Profiler

Our third product platform, our Hyb & Seq molecular profiling system, is currently under development. Hyb & Seq is designed to use a modified version of our proprietary chemistry to determine and analyze gene sequences within a biological sample, or to potentially profile the activity of an even greater number of genes.

While currently available NGS technology has become widely used for research, challenges relating to complex workflow and the need for a large central laboratory to batch process samples to reduce cost have limited broader NGS adoption for use in clinical diagnostic applications to date.

Hyb & Seq is designed to use a modified version of our proprietary chemistry to determine sequence data similar to NGS. As our chemistry does not require amplification, enzyme application or library preparation, Hyb & Seq may offer a faster, easier to use way of determining gene sequences as compared to existing NGS technologies. Hyb & Seq's simple workflow and compatibility with a variety of sample types may offer the potential for a sample-to-answer solution for clinical sequencing. Hyb & Seq may also offer the ability to rapidly detect and quantify a large number of RNA or DNA targets in parallel. Potential applications of this capability could include gene expression measurement, or infectious disease testing.

Hyb & Seq is expected to become commercially available in 2021.

Collaborations

Lam Research Corporation

In August 2017, we entered into a collaboration agreement with Lam Research Corporation, or Lam, to develop our Hyb & Seq sequencing platform and related assays. Under the terms of the agreement, Lam will contribute up to an aggregate of $50.0 million towards the project. The development funding is non-refundable, unless the parties determine that completion of development of the product will not continue, in which case any funds advanced to us by Lam that have not been committed or spent will be refunded to Lam. We will reimburse Lam for the cost of up to 10 full-time Lam employees each year in accordance with the product development plan. Lam is eligible to receive certain single-digit percentage royalty payments from us on net sales of certain products and technologies developed under the agreement, if any such net sales are recorded. The maximum amount of royalties we may pay to Lam will be capped at an amount up to three times the amount of development funding actually provided by Lam. We retain exclusive rights to obtain regulatory approval, manufacture and commercialize any Hyb & Seq products.

All intellectual property made or conceived solely by us pursuant to the collaboration will be owned by us and licensed to Lam solely for the purposes of the collaboration. All intellectual property made or conceived solely by Lam pursuant to the collaboration will be owned by Lam and, subject to certain restrictions on use with Lam competitors, licensed to us for the purposes of the collaboration and further development and commercialization of our Hyb & Seq platform, as well as certain other products and technologies resulting from the collaboration in the field of molecular profiling. Jointly created intellectual property will be jointly owned, provided that neither we nor Lam use such jointly owned intellectual property in the other party's competitive field.

The collaboration agreement establishes a joint steering committee to oversee, review and coordinate our and Lam's activities under the collaboration agreement and monitor progress and expenditures against the associated development plan. The joint steering committee is comprised of three employees from each of us and Lam, and will be chaired by one of our employees. We will have final decision-making authority on the joint steering committee, subject to certain exceptions for decisions regarding development failure, material changes to the development plan, budget, and the Hyb & Seq product being developed under the agreement, and intellectual property ownership, which require consensus of the parties. The collaboration agreement also contains customary representations, warranties, covenants, indemnities and other obligations of the parties.

The term of the collaboration agreement is 15 years. Either we or Lam may terminate the collaboration agreement in the case of a material breach by the other party after providing notice and an opportunity to cure or in the case of bankruptcy or insolvency of the other party. The joint steering committee may also terminate the collaboration agreement if development is discontinued in the case of a development failure. Lam may also terminate the

collaboration agreement on or after the first anniversary in the event we undergo a change of control.

In connection with the execution of the collaboration agreement, we issued Lam a warrant to purchase up to 1.0 million shares of our common stock with the number of underlying shares exercisable at any time proportionate to the amount of the $50.0 million commitment that has been provided by Lam. The exercise price of the warrant is $16.75 per share, and it

will expire on the seventh anniversary of the issuance date. The warrant was determined to have a fair value of $6.7 million upon issuance, which will be recorded as additional paid in capital proportionately from the quarterly collaboration payments made by Lam.

In connection with the entry into the collaboration agreement and issuance of the warrant, we and Lam have agreed, subject to certain exceptions applicable to Lam, to be bound by certain “standstill” provisions. Pursuant to the “standstill” provisions, until the third anniversary of the entry into the collaboration agreement, we, Lam and our respective officers, directors, employees or contractors acting on their behalf will not (1) acquire, offer to acquire, agree to acquire or publicly propose or offer to acquire, securities, indebtedness, businesses, properties or assets of the other party or any subsidiary or division thereof; (2) initiate, induce or attempt to induce any other person or group to initiate any transaction referred to in clause (1), any stockholder proposal regarding the other party or call hold or convene a stockholders’ meeting of the other party; (3) make or participate in any solicitation of proxies to vote or seek to advise or influence any person with respect to the voting of any voting securities of the other party; (4) make any public announcement with respect to, or submit a proposal or offer for any extraordinary transaction involving the other party or any of its securities or assets; (5) form, join or in any way participate in a group as defined in Section 13(d)(3) of the Securities Exchange Act of 1934, as amended, in connection with any of the foregoing prohibited activities; (6) act or seek to control or influence the management, board of directors or policies of the other party; (7) take any action that could reasonably be expected to require the other party to make a public announcement regarding the possibility of any of the prohibited activities described in clauses (1) through (6) or (8) advise, assist or encourage any other person in connection with any of the foregoing prohibited activities.

In addition, Lam has agreed, subject to certain exceptions, not to offer, sell or transfer any of our common stock or securities convertible into or exchangeable or exercisable for our common stock, for three years after the entry into the collaboration agreement without first obtaining our consent, which we may withhold in our sole discretion, unless the collaboration agreement has been terminated, in which case our consent may not be unreasonably withheld.

Celgene Corporation

In March 2014, we entered into a collaboration agreement with Celgene to develop, seek regulatory approval for, and commercialize a companion diagnostic assay using the nCounter Analysis System to identify a subset of patients with DLBCL, who are believed to be the most likely to benefit from treatment with Celgene’s drug REVLIMID. Under the terms of the collaboration agreement, we will develop, seek regulatory approval for, and commercialize the diagnostic test, and we retain the flexibility to independently develop and commercialize additional indications for the test. Pursuant to our agreement, as amended in February 2018, we are eligible to receive payments from Celgene totaling up to $24.8 million, of which $5.8 million was received as an upfront payment and $19.0 million is for development funding and potential success-based developmental and regulatory milestones. In February 2018, Celgene agreed to provide us with additional funding for work intended to enable a subtype and prognostic indication for the test being developed under the agreement. In connection with this amendment, we agreed to remove the right to receive payments from Celgene in the event commercial sales of the companion diagnostic test do not exceed certain pre-specified minimum annual revenues during the first three years following regulatory approval. In addition, the amendment allows Celgene, at its election, to use trial samples with additional technologies for companion diagnostics.

Under the collaboration agreement with Celgene, we have delivered an in vitro companion diagnostic test that was used to subtype and screen patients who enrolled in a pivotal study of REVLIMID for the treatment of DLBCL. The upfront payment, a portion of the success-based milestone payments and the payments related to the subsequent amendments, totaling $14.5 million, have been received from Celgene to date, and we are using these funds in part to cover our costs for clinical development of the test.

Merck & Co., Inc.

In May 2015, we entered into a clinical research collaboration agreement with Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., or Merck, to develop an assay intended to optimize immune-related gene expression signatures and evaluate the potential to predict benefit from Merck’s anti-PD-1 therapy, KEYTRUDA, in multiple tumor types. In February 2016, we expanded our collaboration with Merck by entering into a new development collaboration agreement to clinically develop, seek regulatory approval for, and commercialize a companion diagnostic test to predict response to KEYTRUDA in multiple tumor types. In connection with the execution of the

development collaboration agreement, we and Merck terminated our May 2015 clinical research collaboration and moved all remaining activities under such clinical research collaboration work plan to the new development collaboration agreement. In October 2017, we were notified by Merck of the decision not to pursue regulatory approval of the companion diagnostic test for KEYTRUDA. As a result, in August 2018, we and Merck agreed to mutually terminate our development collaboration agreement, effective as of September 30, 2018, following the completion of certain close-out activities.

Medivation, Inc. and Astellas Pharma, Inc.

In January 2016, we entered into a collaboration with Medivation, Inc., or Medivation, and Astellas Pharma Inc., or Astellas, to pursue the translation of a novel gene expression signature algorithm discovered by Medivation into a companion diagnostic assay using the nCounter Analysis System. In September 2016, Medivation was acquired by Pfizer, Inc., or Pfizer, and became a wholly owned subsidiary of Pfizer. In May 2017, we received notification from Pfizer and Astellas terminating the collaboration agreement as a result of a decision to discontinue the related clinical trial.

Intellectual Property

We must develop and maintain protection on the proprietary aspects of our technologies in order to remain competitive. We rely on a combination of patents, copyrights, trademarks, trade secret and other intellectual property laws and confidentiality, material transfer agreements, licenses, invention assignment agreements and other contracts to protect our intellectual property rights.

As of December 31, 2018, we owned or exclusively licensed 27 issued U.S. patents and approximately 36 pending U.S. patent applications, including provisional and non-provisional filings. We also owned or licensed approximately 266 pending and granted counterpart applications worldwide, including 118 country-specific validations of 13 European patents. The issued U.S. patents that we own or exclusively license are expected to expire between July 3, 2021 and February 6, 2033. We have either sole or joint ownership positions in all of our pending U.S. patent applications. Where we jointly own cases, we typically have negotiated license or assignment provisions to obtain exclusive rights. For our material nCounter Analysis System and Prosigna product rights, we are the exclusive licensee. We also generally protect our newly developed intellectual property by entering into confidentiality agreements that include intellectual property assignment clauses with our employees, consultants and collaborators.

Our patent applications generally relate to the following main areas:

- our nCounter Analysis System biology, chemistry, methods and hardware;
- specific applications for our nCounter Analysis System technology;
- our gene expression markers, methods and gene signatures for recurrence and drug response in certain forms of cancer;
- biological and chemical compositions, methods and hardware for enzyme and amplification free sequencing; and
- biological and chemical compositions, methods and hardware for multiplexed detection and quantification of protein and/or nucleic acid expression in a defined region of a tissue or cell.

We intend to file additional patent applications in the United States and abroad to strengthen our intellectual property rights; however, our patent applications may not result in issued patents, and we cannot assure investors that any patents that have issued or might issue will protect our technology. We have received notices of claims of potential infringement from third parties and may receive additional notices in the future. When appropriate, we have taken a license to the intellectual property rights from such third parties. For additional information, see the section of this report captioned “Risk Factors — Risks Related to Intellectual Property.”

We own a number of trademarks and develop names for our new products and as appropriate secure trademark protection for them, including domain name registration, in relevant jurisdictions.

License Agreements

We have relied, and expect to continue to rely, on strategic collaborations and licensing agreements with third parties. For example, our base molecular barcoding technology is in-licensed from the Institute for Systems Biology and the intellectual property that forms the basis of Prosigna is in-licensed from Bioclassifier, LLC. In addition to the licenses with the Institute for Systems Biology and Bioclassifier, we have licensed technology related to the DLBCL assay from the National Institutes of Health, and we rely on other license and supply arrangements for proprietary components which require us to pay royalties on the sale of our products. Other research customers are using our nCounter Analysis System to discover gene expression signatures that we believe could form the basis of future diagnostic products. In the future, we may consider these gene signatures for in-licensing. Our licensing arrangements with the Institute for Systems Biology and Bioclassifier are discussed below in greater detail.

Institute for Systems Biology

In 2004, we entered into an agreement with the Institute for Systems Biology pursuant to which the Institute granted to us an exclusive, subject to certain government rights, worldwide license, including the right to sublicense, to the

digital molecular barcoding technology on which our nCounter Analysis System is based, including 13 patents and patent applications. Pursuant to the terms of the amended license agreement, we are required to pay the Institute for Systems Biology royalties on net sales of products sold by us, or our sublicensees, at a low single digit percentage rate, which was reduced by 50% in the

third quarter of 2016 for the remainder of the license term due to the achievement of a cumulative sales threshold. Through December 31, 2018, we have paid aggregate royalties of $5.7 million under the license agreement. Unless terminated earlier in accordance with the terms of the amended license agreement, the agreement will terminate upon the expiration of the last to expire patent licensed to us. The Institute for Systems Biology has the right to terminate the agreement under certain situations, including our failure to meet certain diligence requirements or our uncured material breach of the agreement.

Bioclassifier, LLC

In July 2010, we entered into an exclusive license agreement with Bioclassifier, LLC, pursuant to which Bioclassifier granted to us an exclusive, subject to certain government rights, worldwide license, with the right to sublicense, to certain intellectual property rights and technology, including eight non-provisional patent applications, related to the PAM50 gene signature in the field of research products and prognostic and/or diagnostic tests for cancer, including Prosigna. Bioclassifier has licensed these rights from the academic institutions that employed the cancer researchers that discovered or were involved in the initial development of PAM50. Pursuant to the agreement, we are required to pay Bioclassifier the greater of certain minimum royalty amounts and mid-single digit to low double digit percentage royalties on net sales of products and/or methods sold by us that are covered by patent rights or include, use or are technology licensed to us. Our obligation to pay royalties to Bioclassifier expires on a country-by-country basis upon the expiration of the last patent licensed or, if a product or method includes, uses or is technology licensed to us but is not covered by a patent licensed to us, ten years after the first commercial sale of the product or method in such country. We are also required to pay Bioclassifier a percentage of any income received by us from the grant of a sublicense to the patents or technology licensed to us under the agreement. In July 2018, we agreed to amend our license agreement with Bioclassifier to increase the current royalty rate paid to Bioclassifier on sales of licensed products in the United States to an upper-single digit percentage, which became effective January 1, 2018. The agreement specifies that we will control and be responsible for the costs of prosecuting and enforcing the intellectual property licensed in certain major market countries. The agreement also includes customary rights of termination for Bioclassifier, including for our uncured material breach or our bankruptcy. Through December 31, 2018, we have paid Bioclassifier $2.2 million.

Research and Development

We have committed, and expect to continue to commit, significant resources to developing new technologies and products, improving product performance and reliability and reducing costs. We are continuously seeking to improve our product platforms, including the technology, software, accessibility and overall capability. We also seek to develop additional research consumable content, and new potential molecular diagnostic tests. We have assembled experienced research and development teams at our Seattle, Washington location with the scientific, engineering, software and process talent that we believe is required to successfully grow our business.

As of December 31, 2018, we had 173 employees in research and development, of which 58 hold a Ph.D. degree and one holds an M.D. degree.

Sales and Marketing

We began selling nCounter Analysis Systems to researchers in 2008 and began sales efforts in the clinical laboratory market in 2013. We sell our instruments and related products primarily through our own sales force in North America and through a combination of direct and distributor channels in Europe, the Middle East, Asia Pacific and South America. We have agreements with 28 distributors, each of which is specific to a certain territory. In the event a distributor does not meet minimum performance requirements, we may terminate the distribution agreement or convert from an exclusive to non-exclusive arrangement within the territory, allowing us to enter into arrangements with other distributors for the territory.

For additional information regarding geographic distribution of revenue, see Note 16 of the Notes to Consolidated Financial Statements under Item 8 of this report. For the year ended December 31, 2018, our collaborator, Lam, represented 17% of our total revenue. For the year ended December 31, 2017, two customers/collaborators, Merck, and Medivation, Inc. and Astellas Pharma Inc., represented 25% and 10%, respectively, of our total revenue. For the year ended December 31, 2016, Merck represented 13% of our total revenue.

Instrumentation and Research Consumables

Our sales and marketing efforts for instrumentation and in the life sciences research market are targeted at department heads, research or clinical laboratory directors, principal investigators, core facility directors, and research scientists and pathologists at leading academic institutions, biopharmaceutical companies, publicly and privately-funded research institutions and contract research organizations. We seek to increase awareness of our products among our target customers through direct sales calls, trade shows, seminars, academic conferences, web presence and other forms of internet marketing.

Our instruments require a significant capital investment or commitment to a lease or reagent rental agreement. Accordingly, our sales process involves numerous interactions with multiple people within an organization, and often includes

in-depth analysis by potential customers of our products, proof-of-principle studies, preparation of extensive documentation and a lengthy review process. As a result of these factors, the large capital investment required in purchasing our instruments and the budget cycles of our customers, the time from initial contact with a customer to our receipt of a purchase order can vary significantly and be up to 12 months or longer. Given the length and uncertainty of our sales cycle, we have in the past experienced, and likely will in the future experience, fluctuations in our instrument sales on a period-to-period basis.

We have continued to invest in our commercial channel to increase our reach and productivity. During 2017 and 2018, we added staff focused on sales of our consumable products to support our existing instrument-focused sales staff. We believe these investments helped to drive the growth of our installed instrument base, and the continued utilization of our consumables by our installed base of instrument users.

Molecular Diagnostics

The commercialization of Prosigna kits involves a three-pronged effort. First, we seek to establish third-party reimbursement and patient access for clinical testing services that our clinical laboratory customers will provide based upon our products by gaining inclusion in influential treatment guidelines and educating third-party payors regarding the clinical utility and health economic value of the clinical tests enabled by our technology. Second, we seek to establish an installed base of nCounter Analysis Systems by selling or leasing instruments to select clinical laboratories, with initial sales efforts directed at laboratories, hospitals, networks or practices that test or treat a high volume of breast cancer patients. Third, we intend to drive physician demand for clinical testing services enabled by our diagnostic products, and direct test orders toward those laboratories which have adopted our technology. Where appropriate, we intend to coordinate commercial efforts with the sales and marketing personnel of the clinical laboratories offering clinical testing services based on our diagnostic products.

Manufacturing and Suppliers

We use third-party contract manufacturers to produce our instruments and certain raw materials for our consumables. We build our consumables, including our Panels, Custom CodeSets and reagent packages at our Seattle, Washington facility.

Instruments

We outsource manufacturing of our instruments. Precision System Science, Co., Ltd. of Chiba, Japan, or PSS, is our sole source supplier for the nCounter Prep Station. Korvis Automation Inc., or Korvis, is our sole source supplier for our nCounter Digital Analyzers and our GeoMx DSP instrument at its facility in Corvallis, Oregon. Paramit Corporation, or Paramit, is our sole source supplier for our nCounter SPRINT Profiler at its facility in Morgan Hill, California.

The facilities at which our instruments are built have been certified to ISO 13485:2003 standards. Our contracts with these instrument suppliers do not commit them to carry inventory or make available any particular quantities. Under the terms of the three instrument supply agreements, we are required to place binding purchase orders for instruments that will be delivered to us by the supplier three to six months from the date of placement of the purchase order. Although qualifying alternative third-party manufacturers could be time consuming and expensive, our instruments' design is similar to other instruments and we believe that alternatives would be available if necessary. However, if our instrument suppliers terminate our relationship with them or if they give other customers' needs higher priority than ours, then we may not be able to obtain adequate supplies in a timely manner or on commercially reasonable terms.

Consumables

We manufacture our consumables in our Seattle, Washington facility which has been certified to ISO 13485:2003 standards. We expanded our manufacturing capacity in 2015 by relocating certain research and development functions and converting the space to incremental manufacturing labs and offices. In the future, should additional space become necessary, we believe that there will be space available near our existing facility that we believe we can secure; however, we cannot predict that this space will be available if and when it is needed.

We rely on a limited number of suppliers for certain components and materials used in the manufacture of our consumables. Some of these components are sourced from a single supplier. For example, Cidra Precision Services, LLC, of Wallingford, Connecticut, part of IDEX Health & Science, is the sole supplier of the microfluidic cartridge for our nCounter SPRINT Profiler. For some components, we have qualified second sources for several of our critical reagents, including oligonucleotides, adhesives and dyes. We believe that having dual sources for our components

helps reduce the risk of a production delay caused by a disruption in the supply of a critical component. We continue to pursue qualifying additional suppliers, but cannot predict how expensive, time-consuming or successful these efforts will be. If we were to lose one or more of our suppliers, it may take significant time and effort to qualify alternative suppliers.

Competition

In the life sciences research market, we compete with companies such as Agilent Technologies, Becton-Dickinson, Bio-Rad, Bio-Techne, Fluidigm, HTG Molecular Diagnostics, Illumina, Luminex, Merck Millipore, O-Link, Perkin Elmer, Qiagen, Roche Applied Science, Thermo Fisher Scientific, and 10x Genomics, some of which also offer diagnostic applications of their technologies. These competitors and others have products for gene and protein expression analysis that compete in certain segments of the market in which we sell our products. In addition, there are a number of new market entrants in the process of developing novel technologies for the life sciences market.

In the breast cancer diagnostics market, we compete with Genomic Health's Oncotype Dx, a service for gene expression analysis performed in a central laboratory in Redwood City, California. We also face competition from companies such as Agendia and bioTheranostics, which also offer centralized laboratories that profile gene or protein expression in breast cancer. Outside the United States, we also face regional competition from Myriad Genetics, and its product EndoPredict, a distributed test for breast cancer recurrence.

We believe that we have multiple competitive advantages in the research market, including the automated nature of our systems with simple, rapid and efficient workflow that requires very limited human intervention or labor; the multiplexing capability of our technology to analyze significantly more target molecules in a single tube without amplification, representing multiple biological pathways; the ability to analyze combinations of DNA, RNA and proteins simultaneously in a single experiment; compatibility with many sample types, including difficult samples such as FFPE; and the ability to analyze small sample inputs, in some cases down to a single cell, from a wide variety of sample types.

In the diagnostics market, we believe our competitive advantages include the compelling evidence of Prosigna's ability to inform major medical treatment decisions, including results from our studies; the quality of our nCounter Analysis System, which enables consistent and reproducible results in decentralized laboratories; and the improved convenience for physicians and patients, including more rapid test result turnaround time.

While we believe that we compete favorably based on the factors described above, many of our competitors enjoy other competitive advantages over us, including:

- greater name and brand recognition, financial and human resources;
- broader product lines;
- larger sales forces and more established distributor networks;
- substantial intellectual property portfolios;
- larger and more established customer bases and relationships; and
- better established, larger scale and lower cost manufacturing capabilities.

For additional information, see the section of this report captioned "Risk Factors - The life sciences research and diagnostics markets are highly competitive. If we fail to compete effectively, our business and operating results will suffer."

Government Regulation

Medical Device Regulation

United States

In the United States, medical devices, including in vitro diagnostics, are subject to extensive regulation by the U.S. Food and Drug Administration, or FDA, under the Federal Food, Drug, and Cosmetic Act, or FDC Act, and its implementing regulations, and other federal and state statutes and regulations. The laws and regulations govern, among other things, medical device development, testing, labeling, storage, premarket clearance or approval, advertising and promotion and product sales and distribution.

A medical device is an instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent, or other similar or related article, including any component part or accessory, which is (1) intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease, in man or other animals, or (2) intended to affect the structure or any function of the body of man or other animals, and which does not achieve any of its primary intended purposes through chemical action within or on the body of man or other animals and which is not dependent upon being metabolized for the achievement of any of its primary intended purposes. In vitro diagnostics are a type of medical device, and are tests that can be used in the screening or diagnosis and/or detection of diseases, conditions or infections, including, without limitation, the presence of certain chemicals, genetic or other

biomarkers.

Medical devices to be commercially distributed in the United States must receive from the FDA either clearance of a premarket notification, or 510(k), or premarket approval of a premarket approval application, or PMA, pursuant to the FDC Act prior to marketing, unless subject to an exemption. Devices deemed to pose relatively low risk are placed in either Class I or II. Placement of a device into Class II generally requires the manufacturer to submit to the FDA a 510(k) seeking clearance for commercial distribution; this is known as the 510(k) clearance process. Class III devices that were on the market before May 28, 1976 and for which FDA has not yet required submission of PMAs are also required to submit a 510(k) to FDA. Most Class I devices are exempted from this premarket submission requirement. Devices deemed by the FDA to pose the greatest risk, such as life-sustaining, life-supporting or implantable devices and some diagnostic tests, are placed into Class III requiring PMA approval. Devices deemed not substantially equivalent to a previously 510(k)-cleared device or novel devices for which no predicate device exists are placed into Class III, but may be reclassified by FDA into Class I or Class II upon the submission by the manufacturer of a de novo reclassification application. A clinical trial is almost always required to support a PMA application or de novo application, and in many cases is required for a 510(k) application. All clinical studies of investigational devices must be conducted in compliance with applicable FDA or Institutional Review Board, or IRB, regulations.

510(k) Clearance Pathway. To obtain 510(k) clearance, a manufacturer must submit a premarket notification demonstrating to the FDA's satisfaction that the proposed device is substantially equivalent in intended use and in technological characteristics to a previously 510(k) cleared device or a device that was in commercial distribution before May 28, 1976, for which the FDA has not yet called for submission of PMA applications. The previously cleared device is known as a predicate. The FDA's 510(k) clearance pathway usually takes from six to 12 months, but it can take significantly longer, particularly for a novel type of product. The FDA will also not begin a substantive review of the filing until it verifies the application contains all necessary information required to commence a substantive review. If the application does not contain all required information, the FDA will not file the application and return it to the submitter, highlighting the deficiencies in the application.

After a device receives 510(k) clearance, any modification that could significantly affect its safety or effectiveness, or that would constitute a major change in its intended use, requires a new 510(k) clearance or could require a PMA approval. The FDA requires each manufacturer to make this determination in the first instance, but the FDA can review any such decision. If the FDA disagrees with a manufacturer's decision not to seek a new 510(k) clearance, the agency may require the manufacturer to seek 510(k) clearance or PMA approval. If the modified device has been commercialized, the FDA also can require the manufacturer to cease marketing and/or recall the modified device until 510(k) clearance or PMA approval is obtained.

PMA Approval Pathway. The PMA approval pathway requires a demonstration of reasonable assurance of safety and effectiveness of the device to the FDA's satisfaction. The PMA approval pathway is costly, lengthy and uncertain.

A PMA application must provide extensive preclinical and clinical trial data and also information about the device and its components regarding, among other things, device design, manufacturing and labeling. As part of the PMA review, the FDA will typically inspect the manufacturer's facilities for compliance with Quality System Regulation, or QSR, requirements, which impose stringent testing, control, documentation and other quality assurance procedures.

Upon submission, the FDA determines if the PMA application is sufficiently complete to permit a substantive review, and, if so, the application is accepted for filing. The FDA then commences an in-depth review of the PMA application. The PMA approval process typically takes one to three years, but may last longer. The review time is often significantly extended as a result of the FDA asking for more information or clarification of information already provided. The FDA also may respond with a "not approvable" determination based on deficiencies in the application and require additional clinical studies that are often expensive and time consuming and can delay approval for months or even years. During the review period for a new type of device, an FDA advisory committee, a panel of external experts, likely will be convened to review the application and recommend to the FDA whether, or upon what conditions, the device should be approved. Although the FDA is not bound by the advisory panel decision, the panel's recommendation is important to the FDA's overall decision making process.

If the FDA's evaluation of the PMA application is favorable, the FDA typically issues an "approvable letter" requiring the applicant's agreement to specific conditions, such as changes in labeling, or specific additional information such as submission of final labeling, in order to secure final approval of the PMA application. Once the approvable letter is satisfied, the FDA will issue an approval for specific indications, which can be more limited than those originally

sought by the manufacturer. The PMA can include post-approval conditions that the FDA believes necessary to ensure the safety and effectiveness of the device including, among other things, post-approval studies and restrictions on labeling, promotion, sale and distribution. Failure to comply with the conditions of approval can result in material adverse enforcement action, including the loss or withdrawal of the approval or placement of restrictions on the sale of the device until the conditions are satisfied.

Even after approval of a PMA, a new PMA or PMA supplement may be required in the event of a modification to the device, its labeling or its manufacturing process. Supplements to a PMA may require the submission of the same type of information required for an original PMA, except that the supplement is generally limited to that information needed to support the proposed change from the product covered by the original PMA.

De Novo Pathway. If no predicate can be identified, the product is automatically classified as Class III, requiring a PMA. However, the FDA can reclassify, or use "de novo classification" for, a device for which there was no predicate device if the device is low or moderate risk. A device company can submit a de novo application at the outset, rather than submitting a 510(k) application for its particular product. When granting a de novo application the FDA will establish special controls that other applicants for the same device type must satisfy, which often includes labeling restrictions and data requirements. Subsequent applicants can rely upon the de novo product as a predicate for a 510(k) clearance. The de novo route has been used for many in vitro diagnostic products.

Postmarket. After a device is placed on the market, numerous regulatory requirements apply. These include: the quality manufacturing requirements set forth in the QSR, labeling regulations, the FDA's general prohibition against promoting products for unapproved or "off label" uses, registration and listing, the Medical Device Reporting, or MDR, regulation (which requires that manufacturers report to the FDA if their device may have caused or contributed to a death or serious injury or malfunctioned in a way that would likely cause or contribute to a death or serious injury if the malfunction were to recur), and the Reports of Corrections and Removals regulation (which requires manufacturers to report recalls and field actions to the FDA if initiated to reduce a risk to health posed by the device or to remedy a violation of the FDC Act).

The FDA enforces these requirements by unannounced inspection, market surveillance, and other means. If the FDA finds a violation, it can institute a wide variety of enforcement actions, ranging from an untitled regulatory letter or a warning letter, to more severe sanctions such as fines, injunctions, and civil penalties; recall or seizure of products; operating restrictions, partial suspension or total shutdown of production; refusing requests for 510(k) clearance or PMA approval of new products; withdrawing 510(k) clearance or PMA approvals already granted; and criminal prosecution. For additional information, see the section of this report captioned "Risk Factors — Risks Related to Government Regulation and Diagnostic Product Reimbursement."

Products Labeled for Research Use Only. In essence, RUO products are not regulated as medical devices and are therefore not subject to the regulatory requirements enforced by the FDA. The products must bear the statement: "For Research Use Only. Not for Use in Diagnostic Procedures." RUO products cannot make any claims related to safety, effectiveness or diagnostic utility, and they cannot be intended for human clinical diagnostic use. In November 2013, the FDA issued a final guidance on products labeled RUO, which, among other things, reaffirmed that a company may not make any clinical or diagnostic claims about an RUO product. The FDA will also evaluate the totality of the circumstances to determine if the product is intended for diagnostic purposes. If FDA were to determine, based on the totality of circumstances, that our products labeled and marketed for RUO are intended for diagnostic purposes, they would be considered medical devices that will require clearance or approval prior to commercialization.

Dual-Use Instruments. Dual-use instruments are subject to FDA regulation since they are intended, at least in part, for use by customers performing clinical diagnostic testing. In November 2014, FDA issued a guidance that described FDA's approach to regulating molecular diagnostic instruments that combine in a single molecular instrument both approved/cleared device functions and device functions for which approval/clearance is not required.

Laboratory Developed Tests. Laboratory Developed Tests, or LDTs, are developed, validated and used within a single laboratory. In the past, the FDA generally exercised its enforcement discretion for LDTs and did not require clearance or approval prior to marketing. On October 3, 2014, FDA issued two draft guidances that proposed to actively regulate LDTs using a risk-based approach, and would have required 510(k)s or PMAs for certain "moderate" or "high" risk devices. However, in late November 2016, FDA announced that it would not be finalizing the 2014 draft LDT Guidances.

Companion Diagnostics. In August 2014, FDA issued a companion diagnostics final guidance stating that if the device is essential to the safety or efficacy of the drug, FDA will generally require approval or clearance for the device at the time when FDA approves the drug. Most companion diagnostics will require PMA approval.

International

International sales of medical devices are subject to foreign government regulations, which vary substantially from country to country. The European Commission is the legislative body responsible for directives under which manufacturers selling medical products in the European Union, or EU, and the European Economic Area, or EEA, must comply. The EU includes most of the major countries in Europe, while other countries, such as Switzerland, are part of the EEA and have voluntarily adopted laws and regulations that mirror those of the EU with respect to medical

devices. The EU has adopted directives that address regulation of the design, manufacture, labeling, clinical studies and post-market vigilance for medical devices. Devices that comply with the requirements of a relevant directive will be entitled to bear the CE conformity marking, indicating that the device conforms to the essential requirements of the applicable directives and, accordingly, can be marketed throughout the EU and EEA.

In September 2012, Prosigna was CE-marked for compliance with IVDD 98/79/EC for use in conjunction with a diagnostic version of our nCounter Analysis System in the EU to assess a breast cancer patient's risk of distant recurrence.

Outside of the EU, regulatory approval needs to be sought on a country-by-country basis in order to market medical devices. Although there is a trend towards harmonization of quality system standards, regulations in each country may vary substantially, which can affect timelines of introduction.

Reimbursement

Our nCounter FLEX Analysis Systems are purchased or leased by clinical laboratories, which use our diagnostic products as the basis for testing patients' samples. These customers can use our products to enable commercial testing services, and generate revenue for their laboratories for this service. In order to collect payment for testing services based upon our diagnostic products, our clinical laboratory customers may bill third parties, including public and private payors. The demand for our diagnostic products will depend indirectly upon the ability for our customers to successfully bill for and receive reimbursement from third-party payors for the clinical testing services based on our products. Therefore, we intend to work with third-party payors in markets where we intend to sell our diagnostic products to ensure that testing services based on our products are covered and paid.

The decision of payors to cover and pay for a specific testing service is driven by many factors, including:

- strong clinical and analytical validation data;
- acceptance into major clinical guidelines, including the National Comprehensive Cancer Network, or NCCN, the American Society of Clinical Oncologists, or ASCO, and the St. Gallen Consensus guidelines;
- health economic studies that may indicate that the test improves quality-adjusted survival and leads to reduced costs; and
- decision impact studies that show the test leads to better treatment decisions.

We have generated dossiers for submission to payors in support of reimbursement for testing services based upon our initial diagnostic product, Prosigna. The dossiers typically contain data from studies supporting the analytical and clinical validity of Prosigna, as well as health economic analyses that examine whether the clinical information supplied by Prosigna changes medical practice in a way that leads to benefit for both the patients and the payors. In some cases, these health economic analyses may be supported by the results of clinical studies of Prosigna's impact on adjuvant treatment decisions in early stage breast cancer called decision impact studies. We developed a clinical protocol for Prosigna decision impact studies in collaboration with two European cooperative groups, and based on this protocol we have completed three studies to date.

United States

In the United States, clinical laboratory revenue is derived from various third-party payors, including insurance companies, health maintenance organizations, or HMOs, and government healthcare programs, such as Medicare and Medicaid. Clinical laboratory testing services are paid through various methodologies when covered by third-party payors, such as prospective payment systems and fee schedules. For any new clinical test, payment for the clinical laboratory service requires a decision by the third-party payor to cover the particular test, the establishment of a reimbursement rate for the test and the identification of one or more Current Procedural Terminology, or CPT, codes that accurately describe the test.

The American Medical Association, or AMA, has issued a set of CPT codes for billing and reimbursement of complex genomic tests that are based on information from multiple analytes or genes. These new MAAA, or Multianalyte Assays with Algorithmic Analyses, codes are intended to capture tests such as Prosigna and are divided into two categories of unique codes. Category 1 MAAA codes are intended for tests that AMA's CPT Editorial Panel has vetted and found to meet a certain set of criteria, such as demonstrated clinical validity and utility, as well as current national utilization thresholds. MAAA codes issued to complex genomic tests that have not met all Category 1 coding criteria are referred to as administrative MAAA codes. Assignment of either unique reimbursement code to a particular test may facilitate claims processing by payors; however, assignment of a unique reimbursement code alone does not guarantee favorable reimbursement decisions by payors. A genomic test with an assigned MAAA code must still be vetted and approved by individual payors for coverage and payment before reimbursement is achieved. Given the more stringent requirements for receipt of a Category 1 MAAA, including demonstrated clinical validity and utility and satisfaction of national utilization thresholds, we believe that certain payors may more readily render favorable reimbursement decisions for genomic tests with a Category 1 MAAA rather than an administrative MAAA.

In October 2016, we applied for and received a Category 1 MAAA code for Prosigna. The code was published in the CPT code book in late August 2017, with an effective date of January 1, 2018.

The Centers for Medicare & Medicaid Services, or CMS, administers the Medicare and Medicaid programs, which provide health care to almost one in every three Americans. For any particular geographic region, Medicare claims are processed at the local level by Medicare Administrative Contractors, or MACs. New diagnostic tests typically follow one of three routes to coverage via CMS: National Coverage Determinations, or NCDs, Local Coverage Determinations, or LCDs, or simply payment of claims by a MAC. The NCD applies to Medicare beneficiaries living throughout the United States. Due to

cost and CMS bandwidth limitations there are generally few NCDs. The LCD process applies to only beneficiaries in the coverage area of a single MAC, requiring multiple LCDs to cover the testing throughout the United States. Due to the cost of developing an LCD, contractors tend to develop a relatively small number and prefer to tacitly cover services by paying claims. There is also a subset of NCDs known as Coverage with Evidence Development, or CED, that allow a technology (service or procedure) to be covered while evidence of clinical utility is collected through a registry or a study to answer outstanding questions on outcomes. Some MACs have developed Coverage with Data Development, or CDD, policies for the same purpose, which are administered at the local level.

Over the past three years, we have pursued Medicare coverage for Prosigna by working with MACs to obtain favorable LCDs. In 2016, Prosigna achieved Medicare coverage in all 50 states through this process.

For Medicare, the reimbursement rates for individual tests are established under the Clinical Laboratory Fee Schedule (local fee schedules for outpatient clinical laboratory services) or the Physician Fee Schedule, depending on the amount of physician work involved in the test. Molecular diagnostic tests, such as Prosigna, are paid under the Clinical Laboratory Fee Schedule. For additional information, see the section of this report captioned “Risk Factors — Risks Related to Government Regulation and Diagnostic Product Reimbursement.”

With respect to private insurance coverage, we have made significant progress in obtaining third-party reimbursement for the use of tests that incorporate new technology, such as Prosigna. Over the past three years, we have pursued coverage with all of the large private payers to facilitate reimbursement of Prosigna testing. In 2016, coverage policies were adopted by Cigna and Aetna and, in early 2017, Humana adopted a positive coverage policy. Additionally, the Blue Cross and Blue Shield, or BCBS, Association Evidence Street recently published a positive assessment of Prosigna. Most individual BCBS entities have updated their coverage policies to include Prosigna based on this evaluation.

Outside the United States

In Europe, governments are primarily responsible for reimbursing diagnostic testing services. A relatively small portion of the market is made up of private payors and cash-pay patients. The primary barrier of adoption of a new in vitro diagnostic test is often reimbursement, and public reimbursement can take several years to achieve, depending on the country. Public reimbursement for genomic testing for breast cancer is available in Canada, Ireland, France, Greece, Switzerland, Denmark and the United Kingdom. Selected private coverage for testing is available in the United Kingdom, Germany, Spain, France, the UAE and Hungary. Reimbursement approval in some countries, such as Spain and Italy, is managed at the regional level. Israel is a market in which genomic testing for breast cancer is widely reimbursed by all four major Sick Funds, the third-party payors that cover a substantial majority of the population.

Our market access approach in Europe is similar to that in the United States and involves data driving clinical and economic publications to support guideline inclusion. Initially, we have targeted the private and cash pay market in Europe. In parallel, we are seeking to establish public reimbursement of Prosigna by national and regional governments in Europe.

Other Regulations

Our operations in the United States and abroad are subject to various fraud and abuse laws, including, without limitation, the federal anti-kickback statute and state and federal marketing compliance laws in the United States. These laws may impact our operations directly, or indirectly through our customers, and may impact, among other things, our proposed sales, marketing and education programs. In addition, we may be subject to patient privacy regulation by both the federal government and the states in which we conduct our business. The laws that may affect our ability to operate include the following federal laws and their counterparts at the state level:

- the Federal Anti-kickback Law and state anti-kickback prohibitions;
- the Federal physician self-referral prohibition, commonly known as the Stark Law, and state equivalents;
- the Federal Health Insurance Portability and Accountability Act of 1996, as amended;
- the Medicare civil money penalty and exclusion requirements;
- the Federal False Claims Act civil and criminal penalties and state equivalents;
- the Foreign Corrupt Practices Act, which applies to our international activities;
- the Physician Payment Sunshine Act; and
- the European Union's General Data Privacy Regulations, or GDPR.

Employees

As of December 31, 2018, we had 476 employees, of which 115 work in manufacturing, 141 in sales, marketing and business development, 173 in research and development, and 47 in general and administrative. None of our U.S. employees are represented by a labor union or are the subject of a collective bargaining agreement. As of December 31, 2018, of our 476 employees, 432 were employed in the United States and 44 were employed outside the United States.

Environmental Matters

Our operations require the use of hazardous materials (including biological materials) which subject us to a variety of federal, state and local environmental and safety laws and regulations. Some of the regulations under the current regulatory structure 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 development of new regulations will affect our business operations or the cost of compliance.

Where You Can Find Additional Information

We make available free of charge through our investor relations website, www.nanostring.com, our annual reports, quarterly reports, current reports, proxy statements and all amendments to those reports as soon as reasonably practicable after such material is electronically filed or furnished with the SEC. These reports may also be obtained without charge by contacting Investor Relations, NanoString Technologies, Inc., 530 Fairview Avenue, North, Seattle, Washington 98109, e-mail: investorrelations@nanostring.com. Our Internet website and the information contained therein or incorporated therein are not intended to be incorporated into this Annual Report on Form 10-K. In addition, the SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding reports that we file or furnish electronically with them at www.sec.gov.

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Item 1A. Risk Factors

You should carefully consider the following risk factors, in addition to the other information contained in this report, including the section of this report captioned "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our financial statements and related notes. If any of the events described in the following risk factors and the risks described elsewhere in this report occurs, our business, operating results and financial condition could be seriously harmed. This report on Form 10-K also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements as a result of factors that are described below and elsewhere in this report.

Risks Related to Our Business and Strategy

We have incurred losses since we were formed and expect to incur losses in the future. We cannot be certain that we will achieve or sustain profitability.

We have incurred losses since we were formed and expect to incur losses in the future. We incurred net losses of $77.4 million, $43.6 million, and $47.1 million for the years ended December 31, 2018, 2017, and 2016, respectively. As of December 31, 2018, we had an accumulated deficit of $391.3 million. We expect that our losses will continue for at least the next several years as we will be required to invest significant additional funds toward ongoing development and commercialization of our technology. We also expect that our operating expenses will continue to increase as we grow our business, but there can be no assurance that our revenue and gross profit will increase sufficiently such that our net losses decline, or we attain profitability, in the future. Our ability to achieve or sustain profitability is based on numerous factors, many of which are beyond our control, including the market acceptance of our products, future product development and our market penetration and margins. We may never be able to generate sufficient revenue to achieve or sustain profitability.

Our financial results may vary significantly from quarter to quarter which may adversely affect our stock price.

Investors should consider our business and prospects in light of the risks and difficulties we expect to encounter in the new, uncertain and rapidly evolving markets in which we compete. Because these markets are new and evolving, predicting their future growth and size is difficult. We expect that our visibility into future sales of our products, including volumes, prices and product mix between instruments and consumables, and the amount and timing of payments pursuant to collaboration agreements will continue to be limited and could result in unexpected fluctuations in our quarterly and annual operating results.

Numerous other factors, many of which are outside our control, may cause or contribute to significant fluctuations in our quarterly and annual operating results. These fluctuations may make financial planning and forecasting difficult. In addition, these fluctuations may result in unanticipated changes in our available cash, which could negatively affect our business and prospects. Factors that may contribute to fluctuations in our operating results include many of the risks described in this section. Also, one or more of such factors may cause our revenue or operating expenses in one period to be disproportionately higher or lower relative to the others. For example, in May 2017, our collaboration with Medivation, Inc. and Astellas Pharma Inc., or Astellas Pharma, was terminated, resulting in the recognition of $11.3 million of collaboration revenue during the second quarter of 2017. In October 2017, Merck notified us of the decision to not continue to pursue regulatory approval of the companion diagnostic for their product, KEYTRUDA, under our collaboration, resulting in the recognition of $11.6 million of collaboration revenue during the fourth quarter of 2017. In August 2018, we and Merck agreed to mutually terminate our development collaboration agreement, effective as of September 30, 2018, following the completion of certain close-out activities. Furthermore, our instruments involve a significant capital commitment by our customers and accordingly involve a lengthy sales cycle. We may expend significant effort in attempting to make a particular sale, which may be deferred by the customer or never occur. Accordingly, comparing our operating results on a period-to-period basis may not be meaningful, and investors should not rely on our past results as an indication of our future performance. If such fluctuations occur or if our operating results deviate from our expectations or the expectations of securities analysts, our stock price may be adversely affected.

If we do not achieve, sustain or successfully manage our anticipated growth, our business and growth prospects will be harmed.

We have experienced significant revenue growth in recent periods and we may not achieve similar growth rates in the future. Investors should not rely on our operating results for any prior periods as an indication of our future operating performance. If we are unable to maintain adequate revenue growth, our financial results could suffer and our stock price could decline. Furthermore, growth will place significant strains on our management and our operational and financial systems and processes. For example, the commercial launch of our GeoMx DSP, which we anticipate will occur in 2019, is a key element of our growth strategy and will require us to hire and retain additional sales and marketing personnel and resources. If we do not successfully generate demand for our GeoMx DSP instrument, other new product offerings, or manage our anticipated

expenses accordingly, our operating results will be harmed.

Our future success is dependent upon our ability to expand our customer base and introduce new applications and products.

Our current customer base is primarily composed of academic and government research laboratories, biopharmaceutical companies and clinical laboratories (including physician-owned laboratories) that perform analyses using our nCounter Analysis Systems. Our success will depend, in part, upon our ability to increase our market penetration among all of these customers and to expand our market by developing and marketing new research applications, new instruments, and new diagnostic products. During 2017, in an effort to enhance future results, we added sales staff focused on consumable sales to existing customers, enabling existing sales representatives to increase focus on instrument sales. We expect that increasing the installed base of our nCounter Analysis Systems will drive demand for our relatively high margin consumable products. If we are not able to successfully increase our installed base of nCounter Analysis Systems, sales of our consumable products and our margins may not meet expectations. Moreover, we must convince physicians and third-party payors that our diagnostic products, such as Prosigna, are cost effective in obtaining information that can help inform treatment decisions and that our nCounter Analysis Systems could enable an equivalent or superior approach that lessens reliance on centralized laboratories. In the U.S., Medicare and most private insurers provide coverage and payment for patients to be tested with Prosigna; however, other countries, such as Germany, provide more limited coverage and payment for Prosigna.

We also plan to develop and introduce new products which would be sold primarily to new customer types, such as our GeoMx DSP instrument for use in pathology labs and a sequencer based on our Hyb & Seq chemistry targeted for use by hospitals and oncology clinics. We anticipate that our GeoMx DSP instrument will become commercially available in 2019 and scaling and training our sales force to attract new customers will require substantial time and expense. Any failure to expand our existing customer base through the launch of our GeoMx DSP instrument, or other new applications and products would adversely affect our operating results.

Our research business depends on levels of research and development spending by academic and governmental research institutions and biopharmaceutical companies, a reduction in which could limit demand for our products and adversely affect our business and operating results.

In the near term, we expect that a large portion of our revenue will be derived from sales of our nCounter Analysis Systems to academic and government research laboratories and biopharmaceutical companies worldwide for research and development applications. The demand for our products will depend in part upon the research and development budgets of these customers, which are impacted by factors beyond our control, such as:

- changes in government programs (such as the National Institutes of Health) that provide funding to research institutions and companies;
- macroeconomic conditions and the political climate;
- changes in the regulatory environment;
- differences in budgetary cycles;
- competitor product offerings or pricing;
- market-driven pressures to consolidate operations and reduce costs; and
- market acceptance of relatively new technologies, such as ours.

In addition, academic, governmental and other research institutions that fund research and development activities may be subject to stringent budgetary constraints that could result in spending reductions, reduced allocations or budget cutbacks, which could jeopardize the ability of these customers to purchase our products. Our operating results may fluctuate substantially due to reductions and delays in research and development expenditures by these customers. Any decrease in our customers' budgets or expenditures, or in the size, scope or frequency of capital or operating expenditures, could materially and adversely affect our business, operating results and financial condition.

Our sales cycle is lengthy and variable, which makes it difficult for us to forecast revenue and other operating results.

Our sales process involves numerous interactions with multiple individuals within an organization, and often includes in-depth analysis by potential customers of our products, performance of proof-of-principle studies, preparation of extensive documentation and a lengthy review process. As a result of these factors, the large capital investment required in purchasing our instruments and the budget cycles of our customers, the time from initial contact with a customer to our receipt of a purchase order can vary significantly and be up to 12 months or longer. With the

introduction of our nCounter SPRINT system in July 2015, which is targeted at individual researchers that often have less certain funding than other potential customers, our visibility regarding timing of sales has decreased. Given the length and uncertainty of our sales cycle, we have in the past experienced, and likely will in the future experience, fluctuations in our instrument sales on a period-to-period basis. These

factors also make it difficult to forecast revenue on a quarterly basis. Furthermore, from time-to-time, we may lease instruments or place instruments under reagent rental agreements, wherein a customer does not purchase an instrument upfront but instead pays a rental fee associated with each purchase of reagents. An increase in instruments placed under these lease or reagent rental agreements may reduce the number of instruments we would otherwise sell in any period. In addition, any failure to meet customer expectations could result in customers choosing to continue to use their existing systems or to purchase systems other than ours.

Our reliance on distributors for sales of our products outside of the United States, and on clinical laboratories for delivery of Prosigna testing services, could limit or prevent us from selling our products and impact our revenue.

We have established distribution agreements for our nCounter Analysis Systems and related consumable products in many countries where we do not sell directly. We intend to continue to grow our business internationally, and to do so we must attract additional distributors and retain existing distributors to maximize the commercial opportunity for our products. There is no guarantee that we will be successful in attracting or retaining desirable sales and distribution partners or that we will be able to enter into such arrangements on favorable terms. Distributors may not commit the necessary resources to market and sell our products to the level of our expectations or may choose to favor marketing the products of our competitors. If current or future distributors do not perform adequately, or we are unable to enter into effective arrangements with distributors in particular geographic areas, we may not realize long-term international revenue growth.

Similarly, we or our distributors have entered into agreements with clinical laboratories globally to provide Prosigna testing services. We do not provide testing services directly and, thus, we are reliant on these clinical laboratories to actively promote and sell Prosigna testing services. These clinical laboratories may take longer than anticipated to begin offering Prosigna testing services and may not commit the necessary resources to market and sell Prosigna testing services to the level of our expectations. Furthermore, we intend to contract with additional clinical laboratories to offer Prosigna testing services, including physician-owned laboratories, and we may be unsuccessful in attracting and contracting with new clinical laboratory providers. If current or future Prosigna testing service providers do not perform adequately, or we are unable to enter into contracts with additional clinical laboratories to provide Prosigna testing services, we may not be successful selling Prosigna and our future revenue prospects may be adversely affected.

Our future capital needs are uncertain and we may need to raise additional funds in the future.

We believe that our existing cash and cash equivalents, together with funds available under our term loan agreement and revolving credit facility, will be sufficient to meet our anticipated cash requirements for at least the next 12 months. However, we may need to raise substantial additional capital to:

- expand the commercialization of our products;
- fund our operations; and
- further our research and development.

Our future funding requirements will depend on many factors, including:

- market acceptance of our products;
- the cost and timing of establishing additional sales, marketing and distribution capabilities;
- revenue and cash flow derived from existing or future collaborations;
- the cost of our research and development activities;
- the cost and timing of regulatory clearances or approvals;
- the effect of competing technological and market developments; and
- the extent to which we acquire or invest in businesses, products and technologies, including new licensing arrangements for new products.

We cannot assure you that we will be able to obtain additional funds on acceptable terms, or at all. If we raise additional funds by issuing equity or equity-linked securities, or convertible debt, our stockholders may experience dilution. For example, in January 2018, we entered into a sales agreement with Cowen and Company, LLC, or Cowen, to sell up to $40.0 million worth of shares of our common stock, from time to time, through an “at the market” equity offering program under which Cowen will act as sales agent. In July 2018 and August 2018, we sold an aggregate of 4,600,000 shares of common stock in an underwritten public offering for net proceeds of $53.8 million. In October 2018, we entered into a new $100.0 million term loan facility with CR Group L.P. Additional debt financing, if

available, may involve additional covenants restricting our operations or our ability to incur additional debt. Any debt or additional equity financing that we raise may contain terms that are not favorable to us or our stockholders. If we raise additional funds through collaboration and licensing arrangements with third parties, it may be necessary to relinquish some rights to our technologies or our products, or grant licenses on terms that are not favorable to us. We have in the past pursued these types of transactions, and may in the future

pursue similar transactions or other strategic transactions, on our own or with other advisors, that may impact our business and prospects and the value of our common stock. If we do not have, or are not able to obtain, sufficient funds, we may have to delay development or commercialization of our products or license to third parties the rights to commercialize products or technologies that we would otherwise seek to commercialize. We also may have to reduce marketing, customer support or other resources devoted to our products or cease operations. Any of these factors could harm our operating results.

Our research and development efforts will be hindered if we are not able to contract with third parties for access to archival tissue samples.

Under standard clinical practice, tumor biopsies removed from patients are preserved and stored in formalin-fixed paraffin embedded, or FFPE, format. We rely on our ability to secure access to these archived FFPE tumor biopsy samples, as well as information pertaining to the clinical outcomes of the patients from which they were derived for our clinical development activities. Others compete with us for access to these samples. Additionally, the process of negotiating access to archived samples is lengthy because it typically involves numerous parties and approval levels to resolve complex issues such as usage rights, institutional review board approval, privacy rights, publication rights, intellectual property ownership and research parameters. In January 2017, the Department of Health and Human Services finalized new rules, which became effective as of January 19, 2018, expanding the language to be included in informed consent forms related to the collection of identifiable private information or identifiable biospecimens. If this new requirement, or other factors arising in the future, impact our ability to negotiate access to archived tumor tissue samples with hospitals, clinical partners, pharmaceutical companies, or companies developing therapeutics on a timely basis or on commercially reasonable terms, or at all, or if other laboratories or our competitors secure access to these samples before us, our ability to research, develop and commercialize future products will be limited or delayed.

We may not be able to develop new products, enhance the capabilities of our systems to keep pace with rapidly changing technology and customer requirements or successfully manage the transition to new product offerings, any of which could have a material adverse effect on our business and operating results.

Our success depends on our ability to develop new products and applications for our technology in existing and new markets, while improving the performance and cost-effectiveness of our systems. New technologies, techniques or products could emerge that might offer better combinations of price and performance than our current or future products and systems. Existing markets for our products, including gene expression analysis, gene fusions and copy number variation, as well as new markets, such as protein expression and gene mutations, and potential markets for our research and diagnostic product candidates, are characterized by rapid technological change and innovation. Competitors may be able to respond more quickly and effectively than we can to new or changing opportunities, technologies, standards or customer requirements. We anticipate that we will face increased competition in the future as existing companies and competitors develop new or improved products and as new companies enter the market with new technologies. It is critical to our success that we anticipate changes in technology and customer requirements and successfully introduce new, enhanced and competitive technologies to meet our customers' and prospective customers' needs on a timely and cost-effective basis. If we do not successfully innovate and introduce new technology into our product lines, our business and operating results will be adversely impacted.

The development of new products typically requires new scientific discoveries or advancements and complex technology and engineering. Such developments may involve external suppliers and service providers, making the management of development projects complex and subject to risks and uncertainties regarding timing, timely delivery of required components or services and satisfactory technical performance of such components or assembled products. For example, in 2017, we continued to work with our supplier of cartridges used in our nCounter SPRINT systems to improve the design which resolved the previous leakage issues in the microfluidic device produced for us. If we do not achieve the required technical specifications or successfully manage new product development processes, or if development work is not performed according to schedule, then such new technologies or products may be adversely impacted and our business and operating results may be harmed.

Additionally, we must carefully manage the introduction of new products. If customers believe that such products will offer enhanced features or be sold for a more attractive price, they may delay purchases until such products are available. If customers conclude that such new products offer better value as compared to our existing products, we may suffer from reduced sales of our existing products and our overall revenue may decline. We may also have excess

or obsolete inventory of older products as we transition to new products and our experience in managing product transitions is limited. If we do not effectively manage the transitions to new product offerings, our revenue, results of operations and business will be adversely affected.

New market opportunities may not develop as quickly as we expect, limiting our ability to successfully market and sell our products.

The market for our products is new and evolving. Accordingly, we expect the application of our technologies to emerging opportunities will take several years to develop and mature and we cannot be certain that these market opportunities will develop as we expect. For example, in September 2015, we launched our first 3D Biology application, a new product that allows users to simultaneously measure gene and protein expression from a single sample. In 2016 and 2017, we launched additional 3D Biology panels, including our first for the measurement of DNA mutations and in 2017 we launched our 360 panels for use in breast cancer, immuno-oncology and hematology. In 2018, we expanded beyond oncology and launched panels in neuroscience and CAR-T characterization. We recently launched our GeoMx DSP product on an early access basis, which will target the pathology market, a market we have not previously targeted.

The future growth of the market for these new products depends on many factors beyond our control, including recognition and acceptance of our applications by the scientific community and the growth, prevalence and costs of competing methods of genomic analysis. If the markets for our new products do not develop as we expect, our business may be adversely affected. If we are not able to successfully market and sell our products or to achieve the revenue or margins we expect, our operating results may be harmed.

We are dependent on single source suppliers for some of the components and materials used in our products, and the loss of any of these suppliers could harm our business.

We rely on Precision System Science, Co., Ltd of Chiba, Japan, to build our nCounter Prep Station, Korvis LLC of Corvallis, Oregon, to build our nCounter Digital Analyzer and GeoMx DSP, Paramit Corporation of Morgan Hill, California, to build our new nCounter SPRINT Profiler and IDEX Corporation of Lake Forest, Illinois to build the fluidics cartridge, a key component of our nCounter SPRINT Profiler. Each of these contract manufacturers are sole suppliers. Since our contracts with these instrument suppliers do not commit them to carry inventory or make available any particular quantities, they may give other customers' needs higher priority than ours, and we may not be able to obtain adequate supplies in a timely manner or on commercially reasonable terms. We also rely on sole suppliers for various components we use to manufacture our consumable products. We periodically forecast our needs for such components and enter into standard purchase orders with them. If we were to lose such suppliers, there can be no assurance that we will be able to identify or enter into agreements with alternative suppliers on a timely basis on acceptable terms, if at all. If we should encounter delays or difficulties in securing the quality and quantity of materials we require for our products, our supply chain would be interrupted which would adversely affect sales. If any of these events occur, our business and operating results could be harmed.

We may experience manufacturing problems or delays that could limit our growth or adversely affect our operating results.

Our consumable products are manufactured at our Seattle, Washington facility using complex processes, sophisticated equipment and strict adherence to specifications and quality systems procedures. Any unforeseen manufacturing problems, such as contamination of our facility, equipment malfunction, quality issues with components and materials sourced from third-party suppliers or failure to strictly follow procedures or meet specifications, could result in delays or shortfalls in production or require us to voluntarily recall our consumable products. Identifying and resolving the cause of any such manufacturing or supplier issues could require substantial time and resources. If we are unable to keep up with demand for our products by successfully manufacturing and shipping our products in a timely manner, our revenue could be impaired, market acceptance for our products could be adversely affected and our customers might instead purchase our competitors' products.

In addition, the introduction of new products may require the development of new manufacturing processes and procedures as well as new suppliers. For example, our GeoMx DSP systems may require that we establish supply relationships with antibody providers. While all of our CodeSets are produced using the same basic processes, significant variations may be required to meet new product specifications. Developing new processes and negotiating supply agreements can be very time consuming, and any unexpected difficulty in doing so could delay the introduction of a product.

If our Seattle facilities become unavailable or inoperable, we will be unable to continue our research and development, manufacturing our consumables or processing sales orders, and our business will be harmed.

We manufacture our consumable products in our headquarters facilities in Seattle, Washington. In addition, Seattle is the center for research and development, order processing, receipt of our instruments manufactured by third-party contract manufacturers and shipping products to customers. Our facilities and the equipment we use to manufacture our consumable products would be costly, and would require substantial lead time, to repair or replace. Seattle is situated near active earthquake fault lines. These facilities may be harmed or rendered inoperable by natural or man-made disasters, including earthquakes and power outages, which may render it difficult or impossible for us to produce our products for some period of time. The inability to manufacture consumables or to ship products to customers for even a short period of time may result in the loss of customers or harm our reputation, and we may be unable to regain those customers in the future. Although we possess insurance for

damage to our property and the disruption of our business, this insurance, and in particular earthquake insurance, which is limited, 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 expect to generate a substantial portion of our product and service revenue internationally and are subject to various risks relating to our international activities, which could adversely affect our operating results.

For 2018, 2017, and 2016 approximately 40%, 40%, and 38% respectively, of our product and service revenue was generated from sales to customers located outside of North America. We believe that a significant percentage of our future revenue will come from international sources as we expand our overseas operations and develop opportunities in additional areas. Engaging in international business involves a number of difficulties and risks, including:

- required compliance with existing and changing foreign regulatory requirements and laws;
- required compliance with anti-bribery laws, such as the U.S. Foreign Corrupt Practices Act and U.K. Bribery Act, data privacy requirements, labor laws and anti-competition regulations;
- export or import restrictions;
- various reimbursement and insurance regimes;
- laws and business practices favoring local companies;
- longer payment cycles and difficulties in enforcing agreements and collecting receivables through certain foreign legal systems;
- political and economic instability, such as the anticipated exit of Great Britain from the European Economic Community;
- potentially adverse tax consequences, tariffs, customs charges, bureaucratic requirements and other trade barriers;
- difficulties and costs of staffing and managing foreign operations; and
- difficulties protecting or procuring intellectual property rights.

As we expand internationally, our results of operations and cash flows will become increasingly subject to fluctuations due to changes in foreign currency exchange rates. Historically, most of our revenue has been denominated in U.S. dollars, although we have sold our products and services in local currency outside of the United States, principally the Euro. Our expenses are generally denominated in the currencies in which our operations are located, which is primarily in the United States. As our operations in countries outside of the United States grow, our results of operations and cash flows will increasingly be subject to fluctuations due to changes in foreign currency exchange rates, which could harm our business in the future. For example, if the value of the U.S. dollar increases relative to foreign currencies, our product and service revenue could be adversely affected as we convert revenue from local currencies to U.S. dollars. Similarly, a strong U.S. dollar relative to the local currencies of our international customers can potentially reduce demand for our products, which may compound the adverse effect of foreign exchange translation on our revenue. If we dedicate significant resources to our international operations and are unable to manage these risks effectively, our business, operating results and prospects will suffer.

Significant U.K. or European developments stemming from the U.K.’s decision to withdraw from the European Union could have a material adverse effect on us.

In June 2016, the United Kingdom held a referendum and voted in favor of leaving the European Union, and in March 2017, the government of the United Kingdom formally initiated the withdrawal process. Negotiations for the United Kingdom's exit from the EU, or Brexit, has created political and economic uncertainty, particularly in the United Kingdom and the European Union, and this uncertainty may last for years. Our business in the United Kingdom, the European Union, and worldwide could be affected during this period of uncertainty, and perhaps longer, by the impact of the United Kingdom’s referendum. There are many ways in which our business could be affected, only some of which we can identify as of the date of this report.

The decision of the United Kingdom to withdraw from the European Union has caused and, along with events that could occur in the future as a consequence of the United Kingdom’s withdrawal may continue to cause significant volatility in global financial markets, including in global currency and debt markets. This volatility could cause a slowdown in economic activity in the United Kingdom, Europe or globally, which could adversely affect our operating results and growth prospects. In addition, our business could be negatively affected by new trade agreements or data transfer agreements between the United Kingdom and other countries, including the United States, and by the possible imposition of trade or other regulatory and immigration barriers in the United Kingdom. In

addition, the Europe-wide market authorization framework for our products (and for the drugs sold by our collaboration partners in the pharmaceutical industry) and access to European Union research funding by research scientists based in the United Kingdom may also change. Furthermore, we currently operate in Europe

through a subsidiary based in the United Kingdom, which provides us with certain operational, tax and other benefits, as well as through other subsidiaries in Europe. The United Kingdom's withdrawal from the European Union could adversely affect our ability to realize those benefits and we may incur costs and suffer disruptions in our European operations as a result. These possible negative impacts, and others resulting from the United Kingdom's actual or threatened withdrawal from the European Union, may adversely affect our operating results and growth prospects.

Changes in tax laws or regulations that are applied adversely to us or our customers may have a material adverse effect on our business, cash flow, financial condition or results of operations.

New income, sales, use or other tax laws, statutes, rules, regulations or ordinances could be enacted at any time, which could affect the tax treatment of our domestic and foreign earnings. Any new taxes could adversely affect our domestic and international business operations, and our business and financial performance. Further, existing tax laws, statutes, rules, regulations or ordinances could be interpreted, changed, modified or applied adversely to us. For example, the legislation commonly known as the Tax Cut & Jobs Act, which was signed into law on December 22, 2017, significantly revised the Internal Revenue Code of 1986, as amended, or the Code. The newly enacted federal income tax law, among other things, contains significant changes to corporate taxation, including a reduction of the federal statutory rates from a top marginal rate of 35% to a flat rate of 21%, limitation of the tax deduction for interest expense to 30% of adjusted earnings (except for certain small businesses), limitation of the deduction for net operating losses to 80% of current year taxable income, elimination of net operating loss carrybacks, one time taxation of offshore earnings at reduced rates regardless of whether they are repatriated, elimination of U.S. tax on foreign earnings (subject to certain important exceptions), immediate deductions for certain new investments instead of deductions for depreciation expense over time, and modifying or repealing many business deductions and credits. Notwithstanding the reduction in the corporate income tax rate, the overall impact of the new federal tax law is uncertain and our business and financial condition could be adversely affected. It is also unknown if and to what extent various states will conform to the newly enacted federal tax law. The impact of this tax reform on holders of our common stock is likewise uncertain and could be adverse.

Our ability to use net operating losses to offset future taxable income may be subject to certain limitations.

As of December 31, 2018, we had federal net operating loss carryforwards, or NOLs, to offset future taxable income of approximately $288.7 million. The federal NOL carryforwards generated during and after fiscal 2018 totaling $55.0 million are carried forward indefinitely, while all others, if not utilized, will expire in various years beginning in 2025. A lack of future taxable income would adversely affect our ability to utilize these NOLs. In addition, under Section 382 of the Code, a corporation that undergoes an "ownership change" is subject to limitations on its ability to utilize its NOLs to offset future taxable income. We may have already experienced one or more ownership changes. Depending on the timing of any future utilization of our carryforwards, we may be limited as to the amount that can be utilized each year as a result of such previous ownership changes. However, we do not believe such limitations will cause our NOL and credit carryforwards to expire unutilized. In addition, future changes in our stock ownership as well as other changes that may be outside of our control, could result in additional ownership changes under Section 382 of the Code. Our NOLs may also be impaired under similar provisions of state law or limited pursuant to provisions of the recent Tax Cut and Jobs Act amendments to the Code. We have recorded a full valuation allowance related to our NOLs and other deferred tax assets due to the uncertainty of the ultimate realization of the future benefits of those assets.

Provisions of our debt instruments may restrict our ability to pursue our business strategies.

Our new term loan agreement with CR Group L.P., and revolving credit facility with Silicon Valley Bank require us, and any debt instruments we may enter into in the future may require us, to comply with various covenants that limit our ability to, among other things:

- dispose of assets;
- complete mergers or acquisitions;
- incur indebtedness;
- encumber assets;
- pay dividends or make other distributions to holders of our capital stock;
- make specified investments;
- engage in any new line of business; and

- engage in certain transactions with our affiliates.

These restrictions could inhibit our ability to pursue our business strategies. In addition, we are subject to financial covenants based on total revenue and minimum cash balances. If we default under our term loan agreement or revolving credit facility, and such event of default is not cured or waived, the lenders could terminate commitments to lend and cause all

amounts outstanding with respect to the debt to be due and payable immediately, which in turn could result in cross defaults under other debt instruments. Our assets and cash flow may not be sufficient to fully repay borrowings under all of our outstanding debt instruments if some or all of these instruments are accelerated upon a default. We may incur additional indebtedness in the future. The debt instruments governing such indebtedness could contain provisions that are as, or more, restrictive than our existing debt instruments. If we are unable to repay, refinance or restructure our indebtedness when payment is due, the lenders could proceed against the collateral granted to them to secure such indebtedness or force us into bankruptcy or liquidation.

Acquisitions or joint ventures could disrupt our business, cause dilution to our stockholders and otherwise harm our business.

We may acquire other businesses, products or technologies as well as pursue strategic alliances, joint ventures, technology licenses or investments in complementary businesses. We have not made any acquisitions to date, and our ability to do so successfully is unproven. Any of these transactions could be material to our financial condition and operating results and expose us to many risks, including:

- disruption in our relationships with customers, distributors or suppliers as a result of such a transaction;
- unanticipated liabilities related to acquired companies;
- difficulties integrating acquired personnel, technologies and operations into our existing business;
- diversion of management time and focus from operating our business;
- increases in our expenses and reductions in our cash available for operations and other uses; and
- possible write-offs or impairment charges relating to acquired businesses.

Foreign acquisitions involve unique risks in addition to those mentioned above, including those related to integration of operations across different cultures and languages, currency risks and the particular economic, political and regulatory risks associated with specific countries.

Also, the anticipated benefit of any strategic transaction may not materialize. Future acquisitions or dispositions could result in potentially dilutive issuances of our equity securities, the incurrence of debt, contingent liabilities or amortization expenses or write-offs of goodwill, any of which could harm our financial condition. We cannot predict the number, timing or size of future joint ventures or acquisitions, or the effect that any such transactions might have on our operating results.

If we are unable to recruit, train and retain key personnel, we may not achieve our goals.

Our future success depends on our ability to recruit, train, retain and motivate key personnel, including our senior management, research and development, manufacturing and sales and marketing personnel. Competition for qualified personnel is intense, particularly in the Seattle, Washington area. Our growth depends, in particular, on attracting, retaining and motivating highly-trained sales personnel with the necessary scientific background and ability to understand our systems at a technical level to effectively identify and sell to potential new customers. We do not maintain fixed term employment contracts or key man life insurance with any of our employees. Because of the complex and technical nature of our products and the dynamic market in which we compete, any failure to attract, train, retain and motivate qualified personnel could materially harm our operating results and growth prospects.

Undetected errors or defects in our products could harm our reputation, decrease market acceptance of our products or expose us to product liability claims.

Our products may contain undetected errors or defects when first introduced or as new versions are released. Disruptions or other performance problems with our products may damage our customers' businesses, harm our reputation and result in reduced revenues. If that occurs, we may also incur significant costs, the attention of our key personnel could be diverted, or other significant customer relations problems may arise. We may also be subject to warranty and liability claims for damages related to errors or defects in our products. A material liability claim or other occurrence that harms our reputation or decreases market acceptance of our products could adversely impact our business and operating results.

The sale and use of products or services based on our technologies, or activities related to our research and clinical studies, could lead to the filing of product liability claims if someone were to allege that one of our products contained a design or manufacturing defect which resulted in the failure to adequately perform the analysis for which it was designed. A product liability claim could result in substantial damages and be costly and time consuming to defend, either of which could materially harm our business or financial condition. We cannot assure investors that our product

liability insurance would adequately protect our assets from the financial impact of defending a product liability claim. Any product liability claim brought against us, with or without merit, could increase our product liability insurance rates or prevent us from securing insurance coverage in the future.

We face risks related to handling of hazardous materials and other regulations governing environmental safety.

Our operations are subject to complex and stringent environmental, health, safety and other governmental laws and regulations that both public officials and private individuals may seek to enforce. Our activities that are subject to these regulations include, among other things, our use of hazardous materials and the generation, transportation and storage of waste. We could discover that we, an acquired business or our suppliers are not in material compliance with these regulations. Existing laws and regulations may also be revised or reinterpreted, or new laws and regulations may become applicable to us, whether retroactively or prospectively, that may have a negative effect on our business and results of operations. It is also impossible to eliminate completely the risk of accidental environmental contamination or injury to individuals. In such an event, we could be liable for any damages that result, which could adversely affect our business.

If we experience a significant disruption in our information technology systems or breaches of data security, our business could be adversely affected.

We rely on information technology systems to keep financial records, manage our manufacturing operations, fulfill customer orders, capture laboratory data, maintain corporate records, communicate with staff and external parties and operate other critical functions. Our information technology systems are potentially vulnerable to disruption due to breakdown, malicious intrusion and computer viruses or other disruptive events including but not limited to natural disaster. If we were to experience a prolonged system disruption in our information technology systems or those of certain of our vendors, it could negatively impact our ability to serve our customers, which could adversely impact our business. Although we maintain offsite back-ups of our data, if operations at our facilities were disrupted, it may cause a material disruption in our business if we are not capable of restoring function on an acceptable timeframe. In addition, our information technology systems are potentially vulnerable to data security breaches — whether by employees or others — which may expose sensitive data to unauthorized persons. Such data security breaches could lead to the loss of trade secrets or other intellectual property, or could lead to the public exposure of personal information (including sensitive personal information) of our employees, customers and others, any of which could have a material adverse effect on our business, reputation, financial condition and results of operations. In addition, any such access, disclosure or other loss of information could result in legal claims or proceedings, liability under laws that protect the privacy of personal information, including state data protection regulations and the E.U. General Data Protection Regulation, or GDPR, and other regulations, the breach of which could result in significant penalties. In addition, these breaches and other inappropriate access can be difficult to detect, and any delay in identifying them may lead to increased harm of the type described above.

We intend to seek strategic collaborations and partnerships and other transactions, which may result in the use of a significant amount of our management resources or significant costs, and we may not be able to fully realize the potential benefit of such transactions.

We intend to seek strategic collaborations and partnerships to support the continued growth of the company. Accordingly, we may be engaged in evaluating potential transactions including, without limitation, strategic partnerships, divestitures of existing businesses or assets, a merger or consolidation with a third party that results in a change in control, a sale or transfer of all or a significant portion of our assets or a purchase by a third party of our securities that may result in a minority or control investment by such third party. From time to time, we may engage in discussions that may result in one or more transactions. Although there would be uncertainty that any of these discussions would result in definitive agreements or the completion of any transaction, we may devote a significant amount of our management resources to such a transaction, which could negatively impact our operations. In addition, we may incur significant costs in connection with seeking strategic transactions regardless of whether the transaction is completed. In the event that we consummate a strategic collaboration or partnership or other transaction in the future, we cannot assure you that we would fully realize the potential benefit of such a transaction which could adversely affect our future financial results or that such transaction would positively impact the value of stockholders' investment in us.

Our strategy to seek to enter into strategic collaborations and licensing arrangements with third parties to develop diagnostic tests and other products may not be successful.

We have relied, and expect to continue to rely, on strategic collaborations and licensing agreements with third parties for discoveries based on which we develop diagnostic tests and research products. For example, we licensed the rights

to intellectual property that forms the basis of Prosigna from Bioclassifier, LLC, which was founded by several of our research customers engaged in translational research. Similarly, in connection with our collaboration with Celgene Corporation, we licensed the rights to intellectual property relating to a gene signature for lymphoma subtyping, which was discovered by a consortium of researchers including several of our research customers, from the National Institutes of Health. In connection with our collaboration with Merck to develop a companion diagnostic test and the subsequent termination of the collaboration agreement, Merck granted to us a non-exclusive license to certain intellectual property that relates to Merck's tumor inflammation signature. We intend to enter into more such arrangements with our research customers and other researchers,

including biopharmaceutical companies and research institutions, for development of future diagnostic products. However, there is no assurance that we will be successful in doing so. Establishing collaborations and licensing arrangements is difficult and time-consuming. Discussions may not lead to collaborations or licenses on favorable terms, if at all. To the extent we agree to work exclusively with a party in a given area, our opportunities to collaborate with others could be limited. Certain parties may seek to partner with companies in addition to us in connection with a project. This, in turn, may limit the commercial potential of any products that are the subject of such collaborations. Potential collaborators or licensors may elect not to work with us based upon their assessment of our financial, regulatory, commercial or intellectual property position. In particular, our customers are not obligated to collaborate with us or license technology to us, and they may choose to develop diagnostic products themselves or collaborate with our competitors.

New diagnostic product development involves a lengthy and complex process, and we may be unable to commercialize on a timely basis, or at all, any of the tests or products we develop individually or with our collaborators.

Few research and development projects result in successful commercial products, and success in early clinical studies often is not replicated in later studies. At any point, we may abandon development of a product candidate or we may be required to expend considerable resources repeating clinical studies, which would adversely impact potential revenue and our expenses. In addition, any delay in product development would provide others with additional time to commercialize competing products before we do, which in turn may adversely affect our growth prospects and operating results.

In addition, the success of the development programs for any product candidates or assays developed in collaboration with others will be dependent on the continued pursuit and success of the related drug trials by our collaborators. For example, in October 2017, Merck notified us of their decision not to continue to pursue regulatory approval of the companion diagnostic we were developing for their product, KEYTRUDA, and in August 2018, we and Merck agreed to mutually terminate our development collaboration agreement. There is no guarantee that our collaborators will continue to pursue clinical trials for product candidates or assays that are the subject of our collaborations or that such clinical trials will be successful and, as a result, we may expend considerable time and resources developing in vitro diagnostic assays that will not gain regulatory approval. For example, pursuant to our collaboration with Celgene Corporation, we are developing a companion diagnostic, LymphMark, that is expected to be a potential companion diagnostic to aid in identifying patients with diffuse large B-cell lymphoma for treatment. Depending on the outcome of the clinical trial being run by Celgene, we anticipate we may file for regulatory approval of LymphMark with the U.S. Food and Drug Administration. Furthermore, significant consolidation in the life sciences industry has occurred during the last several years and in connection with such consolidation, the combined company often reassesses its development priorities which may impact our existing collaborations or future opportunities. For example, in May 2017, Astellas Pharma announced a joint decision with Pfizer Inc., or Pfizer, to discontinue the planned ENDEAR trial which was the subject of our collaboration. We were informed that the decision resulted from an oncology portfolio review by Astellas Pharma and Pfizer. In January 2019, Bristol Myers Squibb announced that it was acquiring Celgene; this transaction is expected to close in the third quarter of 2019. Even if we establish new relationships, we or our collaborators may terminate those relationships or they may never result in the successful development or commercialization of future tests or other products. From time to time we have agreed to modify the terms of our agreements with collaborators, including financial terms, and in the future it is possible that we will agree to modify the terms of existing and future agreements with collaborators.

In August 2017, we entered into a collaboration agreement with Lam Research Corporation, or Lam, with respect to the development and commercialization of our Hyb & Seq sequencing platform and related assays. Pursuant to the terms of the collaboration agreement, Lam will contribute up to $50.0 million, payable quarterly, for allowable development costs. In exchange, Lam is eligible to receive certain single-digit percentage royalty payments on net sales by us of certain products and technologies developed under the collaboration agreement, if any. In addition, we issued Lam a warrant to purchase up to 1.0 million shares of our common stock. Any product development activities pursuant to this collaboration are uncertain and development costs may exceed $50.0 million, in which case we would need to obtain additional funding to complete development of our Hyb & Seq sequencing platform and related assays. Ultimately the development may not be successful, which could negatively impact our prospects for future revenue

growth.

Although we expect such collaborations to provide funding to cover our costs of development, the failure, discontinuation or modification of these clinical trials could negatively impact our ability to attract new collaboration partners, and would reduce our prospects for introducing new diagnostic products, revenue growth, and future operating results.

The life sciences research and diagnostic markets are highly competitive. If we fail to compete effectively, our business and operating results will suffer.

We face significant competition in the life sciences research and diagnostic markets. We currently compete with both established and early stage life sciences research companies that design, manufacture and market instruments and consumables for gene expression analysis, single-cell analysis, polymerase chain reaction, or PCR, digital PCR, other nucleic acid detection and additional applications. These companies use well-established laboratory techniques such as microarrays or quantitative

PCR as well as newer technologies such as next generation sequencing such as RNA-sequencing. We believe our principal competitors in the life sciences research and diagnostic markets are Agilent Technologies, Becton-Dickinson, Bio-Rad, Bio-Techne, Fluidigm, HTG Molecular Diagnostics, Illumina, Luminex, Merck Millipore, O-Link, Perkin Elmer, Qiagen, Roche Applied Science, Thermo Fisher Scientific, and 10x Genomics. In addition, there are a number of new market entrants in the process of developing novel technologies for the life sciences market, including those that may compete with GeoMx DSP.

We also compete with commercial diagnostic laboratory companies. We believe our principal competitor in the breast cancer diagnostics market is Genomic Health, which provides gene expression analysis at its central laboratory in Redwood City, California and currently commands a substantial majority of the market. We also face competition from companies such as Agendia, bioTheranostics, and Myriad Genetics.

Many of our current competitors are large publicly-traded companies, or are divisions of large publicly-traded companies, and may enjoy a number of competitive advantages over us, including:

- greater name and brand recognition, financial and human resources;
- broader product lines;
- larger sales forces and more established distributor networks;
- substantial intellectual property portfolios;
- larger and more established customer bases and relationships; and
- better established, larger scale, and lower cost manufacturing capabilities.

We believe that the principal competitive factors in all of our target markets include:

- cost of capital equipment;
- cost of consumables and supplies;
- reputation among customers;
- innovation in product offerings;
- flexibility and ease-of-use;
- accuracy and reproducibility of results; and
- compatibility with existing laboratory processes, tools and methods.

We believe that additional competitive factors specific to the diagnostics market include:

- availability of reimbursement for testing services;
- breadth of clinical decisions that can be influenced by information generated by tests;
- volume, quality, and strength of clinical and analytical validation data;
- inclusion in treatment guidelines; and
- economic benefit accrued to customers based on testing services enabled by products.

We cannot assure investors that our products will compete favorably or that we will be successful in the face of increasing competition from new products and technologies introduced by our existing competitors or new companies entering our markets. In addition, we cannot assure investors that our competitors do not have or will not develop products or technologies that currently or in the future will enable them to produce competitive products with greater capabilities or at lower costs than ours. For example, we recently concluded that certain of our customers have shifted certain types of experiments that previously had been performed on our nCounter system to RNA-sequencing technology. Although we are pursuing several strategies to mitigate this trend, there can be no assurance we will be successful in doing so. Any failure to compete effectively could materially and adversely affect our business, financial condition and operating results.

If Prosigna fails to achieve and sustain sufficient market acceptance, we will not generate expected revenue, and our prospects may be harmed.

Commercialization of Prosigna in Europe, the United States and the other jurisdictions in which we intend to pursue regulatory approval or clearance is a key element of our strategy. Currently, most oncologists seeking sophisticated gene expression analysis for diagnosing and profiling breast cancer in their patients ship tissue samples to a limited number of centralized laboratories typically located in the United States. We may experience reluctance, or refusal, on the part of physicians to order, and third-party payors to pay for, Prosigna if the results of our research and clinical studies, and our sales and marketing activities relating to communication of these results, do not convey to physicians

and patients that Prosigna provides equivalent or better prognostic information than those centralized laboratories. In addition, our diagnostic tests are performed by pathologists in local laboratories, rather than by a vendor in a remote centralized laboratory, which requires us to educate pathologists regarding the benefits of this business model and oncologists regarding the reliability and consistency of results generated locally. Also, we offer Prosigna in other countries outside of the United States, where genomic testing for

breast cancer is not widely available and the market for such tests is new. The future growth of the market for genomic breast cancer testing will depend on physicians' acceptance of such testing and the availability of reimbursement for such tests.

These hurdles may make it difficult to convince healthcare providers that tests using our technologies are appropriate options for cancer diagnostics, may be equivalent or superior to available tests, and may be at least as cost effective as alternative technologies. If we fail to successfully commercialize Prosigna on a widespread basis, we may never receive a return on the significant investments in sales and marketing, medical, regulatory, manufacturing and quality assurance personnel we have made, and further investments we intend to make, which would adversely affect our growth prospects, operating results and financial condition.

Risks Related to Government Regulation and Diagnostic Product Reimbursement

Our "Research Use Only" products for the research, life sciences market could become subject to more stringent regulatory surveillance as medical devices by the FDA or other regulatory agencies in the future which could increase our costs and delay our commercialization efforts, thereby materially and adversely affecting our business and results of operations.

In the United States, most of our products are currently labeled and sold for Research Use Only, or RUO, and not for the diagnosis or treatment of disease, and are sold to pharmaceutical and biotechnology companies, academic and government institutions and research laboratories. Because such products are not intended for diagnostic use, and the products do not include clinical or diagnostic claims or provide directions to use as diagnostic products, they are not subject to the same level of control by the Food and Drug Administration, or FDA, as medical devices. In particular, while the FDA regulations require that RUO products be appropriately labeled, "For Research Use Only," the regulations do not subject such products to the FDA's pre- and post-market controls for medical devices. Pursuant to FDA guidance on RUO products, a company may not make clinical or diagnostic claims about an RUO product or provide clinical directions or clinical support services to customers for RUO products. If the FDA were to modify its approach to regulating products labeled for research use only, it could reduce our revenue or increase our costs and adversely affect our business, prospects, results of operations or financial condition. In the event that the FDA requires marketing authorization of our RUO products in the future, there can be no assurance that the FDA will ultimately grant any clearance or approval requested by us in a timely manner, or at all.

In addition, we sell dual-use instruments with software that has both FDA-cleared functions, and research functions for which FDA approval or clearance is not required. Dual-use instruments are subject to FDA regulation since they are intended, at least in part, for use by customers performing clinical diagnostic testing. In November 2014, FDA issued a guidance document that described FDA's approach to regulating molecular diagnostic instruments that combine both approved/cleared device functions and device functions for which approval/clearance is not required. There is a risk that requirements for dual use instruments could change causing additional costs and delays for development of these products. For example, there could be enforcement action if the FDA determines that approval or clearance was required for those functions for which FDA approval or clearance has not been obtained, or the instruments are being promoted for off-label use. There is also a risk that the FDA could broaden its current regulatory enforcement of dual-use instruments through additional FDA oversight of such products or impose additional requirements upon such products. In July 2017, FDA adopted a new regulation exempting certain clinical multiplex test systems, like the ones used with our Prosigna assay, from premarket notification requirements. However, these new regulations will not impact the FDA clearance requirements for our nCounter Dx Analysis System which will still require 510(k) clearance for use with specific assays, such as Prosigna.

If Medicare and other third-party payors in the United States and foreign countries do not approve reimbursement for diagnostic tests enabled by our technology, or revise or rescind reimbursement rates, the commercial success of our diagnostic products would be compromised.

Successful commercialization of our diagnostic products depends, in large part, on the availability of adequate reimbursement for testing services that our diagnostic products enable from government insurance plans, managed care organizations and private insurance plans. There is significant uncertainty surrounding third-party reimbursement for the use of tests that incorporate new technology. For example, after the FDA clearance of Prosigna in September 2013, it took over two years to achieve broad Medicare reimbursement of Prosigna testing.

If we are unable to obtain positive policy decisions from third-party payors approving reimbursement for our tests at adequate levels, the commercial success of our diagnostic products would be compromised and our revenue would be significantly limited. Even if we do obtain reimbursement for our tests, Medicare, Medicaid and other payors may withdraw their coverage policies, cancel their contracts at any time, review and adjust the rate of reimbursement, require co-payments from patients or stop paying for our tests, which would reduce revenue for testing services based on our technology, and indirectly, demand for our diagnostic products. In addition, insurers, including managed care organizations as well as government payors such as Medicare and Medicaid, have increased their efforts to control the cost, utilization and delivery of healthcare services, which may include decreased coverage or reduced reimbursement.

From time to time, Congress has considered and implemented changes to the Medicare fee schedules in conjunction with budgetary legislation, and pricing and payment terms, including the possible requirement of a patient co-payment for Medicare beneficiaries for tests covered by Medicare, and are subject to change at any time. The Protecting Access to Medicare Act, or PAMA, of 2014 revised the Medicare Clinical Laboratory Fee Schedule, or CLFS, to base prices on private payor rates that are reported to the Centers for Medicare and Medicaid Services, or CMS. In June 2016, CMS released the final Clinical Diagnostic Tests Laboratory Payment System regulations, in response to PAMA. Under the definitions in the regulations, Prosigna is defined as a Clinical Diagnostic Laboratory Test, or CDLT, and therefore will be repriced every three years based on a weighted median of private payor payments submitted by reporting labs. As a result, if private payor payment amounts decline, there is a risk that Medicare prices will fall as well, though PAMA limits these reductions to no more than 10% less than the prior year during calendar years 2018-2020 and no more than 15% less during years 2021-2023. In 2017, as part of the market-based pricing determinations for 2018 required by PAMA, only one private payor payment from a single commercial laboratory was reported, and it was an anomalous payment amount, well below the current Medicare reimbursement price. CMS used that single payment amount as the weighted median, which triggered an automatic 10% reduction in Prosigna's Medicare reimbursement rate of $3,443 to $3,099, effective January 1, 2018, followed by a subsequent 10% reduction to $2,789, effective January 1, 2019. There will be an additional 10% automatic reduction in the Medicare reimbursement rate for Prosigna for calendar year 2020. Reductions in the prices at which testing services based on our technology are reimbursed could reduce our customers' interest in offering Prosigna and have a negative impact on our revenue.

Under PAMA, CMS is required to reprice CLDTs, including Prosigna, every three years. The next repricing will be announced by CMS in late 2020, based on private payor reimbursement data collected by reporting laboratories during the period January 1, 2019 to June 30, 2019. These new prices will take effect on January 1, 2021. Depending on the pricing data reported by these laboratories to CMS, Prosigna's Medicare reimbursement price may change.

In many countries outside of the United States, various coverage, pricing and reimbursement approvals are required. For example, we have received positive reimbursement decisions for Prosigna have occurred in France, certain regions of Spain, Canada, Israel, Switzerland and Denmark, but despite these positive developments, we continue to expect that it will take several years to establish broad coverage and reimbursement for testing services based on our products with most payors in countries outside of the United States, and our efforts may not be successful.

We continue to pursue positive reimbursement and coverage decisions from government insurance plans, managed care organizations and private insurance plans. From time to time, if positive coverage decisions are obtained, we may publicly announce such decisions. In most cases where coverage is denied by a third-party payor, there will be subsequent opportunities to submit additional information or clinical evidence and have such decision reconsidered. We intend to evaluate the benefit of continued pursuit of a positive reimbursement determination on a case by case basis and in most cases expect to continue to pursue a positive coverage decision with those payors based on additional information or subsequent clinical developments; as a result, we do not intend to publicly announce any denials of coverage or the absence of a coverage determination on a regular basis.

Our nCounter reagents may be used by clinical laboratories to create Laboratory-Developed Tests, (LDT), which could, in the future, be the subject of additional FDA regulation as medical devices, which could materially and adversely affect our business and results of operations.

A clinical laboratory can use our custom-manufactured reagents to create what is called a Laboratory Developed Test, or LDT. LDTs, according to the FDA, are diagnostic tests that are developed, validated and performed by a single laboratory and include genetic tests. Historically, LDTs generally have not been subject to FDA regulations. In October 2014, the FDA issued draft guidance documents proposing the use of a risk-based approach to regulating LDTs. Any restrictions on LDTs by the FDA could decrease demand for our reagents. Additionally, compliance with additional regulatory burdens could be time consuming and costly for our customers. While FDA announced in November 2016 that it did not intend to seek finalization of the draft LDT guidance in the near term, FDA could alter its position or Congress could enact legislation that could result in FDA regulation of some LDTs. To date, draft legislative proposals have been discussed, but no legislation has been introduced. If FDA changed its policy or legislation were enacted, it could adversely affect demand for these specialized reagents or our instruments.

Our nCounter reagents allow users to design and validate their own customized assays using standard sets of barcodes provided by us with the laboratories' choice of oligonucleotide probes. These reagents, which are offered to customers in the United States through a custom manufacturing service, may be used by laboratories in conjunction with analyte-specific reagents and general purpose reagents to create diagnostic tests or test systems validated within the accredited testing laboratory.

Approval and/or clearance by the FDA and foreign regulatory authorities for our diagnostic tests will take significant time and require significant research, development and clinical study expenditures and ultimately may not succeed. Before we begin to label and market our products for use as clinical diagnostics in the United States, unless an exemption applies we are required to obtain prior 510(k) clearance, or pre-market approval (PMA) from the FDA. In September 2013, we received FDA 510(k) clearance for Prosigna as a prognostic indicator for distant recurrence-free survival at 10 years in post-menopausal women with Stage I/II lymph node-negative or Stage II lymph node-positive (1-3 positive nodes) hormone receptor-positive breast cancer who have undergone surgery in conjunction with locoregional treatment and consistent with the standard of care. In addition, we are currently collaborating with Celgene on a companion diagnostic test for their drug REVLIMID. In August 2014, the FDA issued a companion diagnostics final guidance stating that if the device is essential to the safety or efficacy of the drug, the FDA generally will require approval or clearance for the device at the time when the FDA approves the drug. The FDA stated in the companion diagnostics final guidance that while in some instances a companion diagnostic could come to market through a 510(k), FDA expects that companion diagnostics usually will require a PMA. In July 2016, the FDA issued a draft co-development companion diagnostic and therapeutic guidance document which similarly reflected this information. The draft guidance appears to also relate, at least in part, to what may be considered complementary diagnostics, i.e., diagnostics that are beneficial for therapeutic product development or clinical decision making but that do not meet the definition of an IVD companion diagnostic. If we developed a diagnostic device to be used in conjunction with a pharmaceutical product that was then cleared or approved but not as a companion diagnostic for the therapeutic product, this may result in potentially reduced revenue for the test as the labeling of the drug may not reference the need for the diagnostic test.

Any 510(k) clearance, de novo authorization or PMA approval we obtain for any future product would place substantial restrictions on how our device is marketed or sold. The FDA will continue to place considerable restrictions on our products, including, but not limited to, the obligation to comply with the Quality System Regulation, or QSR, registering manufacturing facilities, listing the products with the FDA, and complying with labeling, marketing, complaint handling, medical device reporting requirements, and reporting certain corrections and removals. Obtaining FDA clearance or approval for diagnostics can be expensive and uncertain, and generally takes from several months to several years from submission, and generally requires detailed and comprehensive scientific and clinical data, as well as compliance with FDA regulations. In addition, we have limited experience in obtaining PMA approval from the FDA and are therefore supplementing our operational capabilities to manage the more complex processes needed to obtain and maintain PMAs. Notwithstanding the expense, these efforts may never result in FDA approval, de novo authorizations, or 510(k) clearance. Even if we were to obtain regulatory approval, authorization or clearance, it may not be for the uses we believe are important or commercially attractive, in which case we would not market our product for those uses.

Sales of our diagnostic products outside the United States are subject to foreign regulatory requirements governing clinical studies, vigilance reporting, marketing approval, manufacturing, regulatory inspections, product licensing, pricing and reimbursement. These regulatory requirements vary greatly from country to country. As a result, the time required to obtain approvals outside the United States may differ from that required to obtain FDA approval or clearance, and we may not be able to obtain foreign regulatory approvals on a timely basis or at all. Approval or clearance by the FDA does not ensure approval by regulatory authorities in other countries, and approval by one foreign regulatory authority does not ensure approval or clearance by regulatory authorities in other countries or by the FDA, and foreign regulatory authorities could require additional testing beyond what the FDA requires. In addition, FDA regulates exports of medical devices. Failure to comply with these regulatory requirements or to obtain required approvals or clearances could impair our ability to commercialize our diagnostic products outside of the United States.

If we are unable to obtain additional regulatory clearances, registrations, or approvals to market Prosigna in additional countries or if regulatory limitations are placed on our diagnostic products, our business and growth will be harmed. In addition, if we do not obtain additional regulatory clearances or approvals necessary to market products other than Prosigna for diagnostic purposes, we will be limited to marketing such products for research use only.

We have received regulatory clearance in the United States under a 510(k) for a version of our first diagnostic product, Prosigna, providing an assessment of a patient’s risk of recurrence for breast cancer, we have obtained a CE mark for

Prosigna which permits us to market that assay for diagnostic purposes in the European Union, and we have received regulatory clearances in selected other jurisdictions. Other than with respect to Prosigna in such jurisdictions in which we have received regulatory clearance, we are limited to marketing our products for research use only, which means that we cannot make diagnostic or clinical claims. We intend to seek regulatory authorizations to market Prosigna in other jurisdictions and, potentially, for other indications. In addition, pursuant to our collaborations with pharmaceutical companies for the development of companion diagnostic tests for use with their drugs, we are responsible for obtaining any regulatory authorizations needed to use the companion diagnostic tests in clinical trials as well as the regulatory approvals to sell the companion diagnostic tests following completion of such trials. For example, we are currently working on the development of LymphMark, a companion diagnostic test for REVLIMID that we have developed in a collaboration with Celgene. Some of the

compensation we expect to receive pursuant to these collaborations is based on the receipt of such approvals. Any failure to obtain regulatory approvals for our diagnostic tests in a particular jurisdiction may also reduce sales of our nCounter systems for clinical use in that jurisdiction, as the lack of a robust menu of available diagnostic tests would make those systems less attractive to testing laboratories.

We cannot assure investors that we will be successful in obtaining these regulatory clearances, registrations, or approvals. If we do not obtain additional regulatory clearances or approvals to market future products or expand future indications for diagnostic purposes, if additional regulatory limitations are placed on our products or if we fail to successfully commercialize such products, the market potential for our diagnostic products would be constrained, and our business and growth prospects would be adversely affected.

We expect to rely on third parties in conducting any future studies of our diagnostic products that may be required by the FDA or other regulatory authorities, and to fulfill product registration requirements in foreign countries, and those third parties may not perform satisfactorily.

We do not have the ability to independently conduct the clinical studies or other studies that may be required to obtain FDA and other regulatory clearance or approval for our diagnostic products, including additional indications. Accordingly, we expect to rely on third parties, such as medical institutions, clinical investigators, consultants, and our pharmaceutical collaborators to conduct such studies. For example, we contract with clinical laboratories to perform the companion diagnostic tests we have developed that are used in the clinical trials run by pharmaceutical companies pursuant to our companion diagnostic collaborations. Our reliance on these third parties for clinical development activities will reduce our control over these activities. These third-party contractors may not complete activities on schedule or conduct studies in accordance with regulatory requirements or the study design. Our reliance on third parties that we do not control will not relieve us of any applicable requirement to ensure compliance with various procedures required under good clinical practices and regulatory requirements. If these third parties do not successfully carry out their contractual duties or regulatory obligations or meet expected deadlines, if the third parties need to be replaced or if the quality or accuracy of the data they obtain is compromised due to their failure to adhere to our clinical protocols or regulatory requirements or for other reasons, the studies may be extended, delayed, suspended or terminated, and we may not be able to obtain regulatory approval for our diagnostic products. In addition, under our contracts with our pharmaceutical collaborators, we potentially could be held liable for the failure of our third party subcontractors to perform their contractual obligations.

Our pharmaceutical collaborators may decide to end their clinical program, modify or terminate a clinical trial, or not pursue regulatory filings for a companion diagnostic test. For example, in October 2017, Merck notified us of the decision to not continue to pursue regulatory approval of the companion diagnostic for their product, KEYTRUDA, under our collaboration and, in August 2018, we and Merck agreed to mutually terminate our development collaboration agreement. It is also possible that a clinical trial run by one of our collaborators may not meet its endpoint and consequently may not support a regulatory filing for the companion diagnostic we are developing.

In many countries, we are not able to directly apply for product registrations, and therefore must rely on third-party contractors or product distributors resident in those countries to fulfill the product registration requirements. Our reliance on these third parties reduces our control over the registration activities, and those parties may not appropriately register the products. Our reliance on third parties does not relieve us of the obligation to comply with applicable requirements, and therefore any failure on the part of the third parties could subject us to enforcement action in the country in which the registration was not properly fulfilled.

We are subject to ongoing and extensive regulatory requirements, and our failure to comply with these requirements could substantially harm our business.

Certain of our products are regulated as in vitro diagnostic medical devices, including Prosigna and the nCounter FLEX Analysis System. Accordingly, we and certain of our contract manufacturers are subject to ongoing International Organization for Standardization, or ISO, as well as regulation by the FDA and other national health authorities. These may include routine inspections by Notified Bodies, FDA, and other health authorities, of our manufacturing facilities and our records for compliance with requirements such as ISO 13485 and the QSR, which establish extensive requirements for quality assurance and control as well as manufacturing and change control procedures. We are also subject to other regulatory obligations, such as requirements pertaining to the registration of our manufacturing facilities and the listing of our devices with the FDA; continued adverse event and malfunction

reporting; reporting certain corrections and removals; and labeling and promotional requirements. Other agencies may also issue guidelines and regulations that could impact the development of our products, including companion diagnostic tests. For example, the European Medicines Agency, a European Union agency which is responsible for the scientific evaluation of medicines used in the EU, recently launched an initiative to determine guidelines for the use of genomic biomarkers in the development and life-cycle of drugs. On May 25, 2017 the European Union adopted the IVD Directive Regulation, which increases the regulatory requirements applicable to some in vitro diagnostics in

the EU and would require that we re-classify and obtain approval, registration, or clearance for our existing CE-marked IVD products within a five-year grace period (by May 25, 2022).

We may also be subject to additional FDA or global regulatory authority post-marketing obligations or requirements by the FDA or global regulatory authority to change our current product classifications which would impose additional regulatory obligations on us. The promotional claims we can make for Prosigna are limited to the intended use as required by regulatory authority. If we are not able to maintain regulatory compliance, we may not be permitted to market our medical device products and/or may be subject to enforcement by EU Competent Authorities and the FDA and other global regulatory authority such as the issuance of warning or untitled letters, fines, injunctions, and civil penalties; recall or seizure of products; operating restrictions; and criminal prosecution. In addition, we may be subject to similar regulatory regimes of foreign jurisdictions as we continue to commercialize our products in new markets outside of the U.S. and Europe. Adverse Notified Body, EU Competent Authority or FDA or global regulatory authority action in any of these areas could significantly increase our expenses and limit our revenue and profitability.

We may be subject, directly or indirectly, to healthcare fraud and abuse laws and other laws applicable to our marketing practices. If we are unable to comply, or have not complied, with such laws, we could face substantial penalties.

Our operations are directly, or indirectly through our customers, subject to various fraud and abuse laws, including, without limitation, the federal and state anti-kickback statutes and state, federal and foreign marketing compliance laws and gift bans. These laws may impact, among other things, our proposed sales and marketing and education programs and require us to implement additional internal systems for tracking certain marketing expenditures and reporting them to government authorities. In addition, we may be subject to privacy regulations by both the federal government and the states in which we conduct our business as well as by foreign governments and entities. The laws that may affect our ability to operate include:

- the federal Anti-kickback Law and state equivalents;
- the federal physician self-referral prohibition, commonly known as the Stark Law, and the state equivalents;
- the federal Health Insurance Portability and Accountability Act of 1996, as amended;
- the Medicare civil money penalty and exclusion requirements;
- the federal False Claims Act and state equivalents;
- state physician gift bans and state, federal and foreign marketing expenditure disclosure laws;
- the Foreign Corrupt Practices Act, which applies to our international activities; and
- the European Union's General Data Protection Regulation.

If our operations are found to be in violation of any of the laws described above or any other governmental regulations that apply to us, we may be subject to penalties, including civil and criminal penalties, damages, fines and the curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

Healthcare policy changes, including legislation reforming the United States healthcare system, may have a material adverse effect on our financial condition and results of operations.

The Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, collectively, the ACA, enacted in March 2010, made changes that significantly impact the pharmaceutical and medical device industries and clinical laboratories. For example, beginning in 2013, each medical device manufacturer must pay a sales tax in an amount equal to 2.3% of the price for which such manufacturer sells its medical devices. In December 2015, Congress passed a two-year suspension of the medical device tax from January 1, 2016 to December 31, 2017. In January 2018, Congress suspended the tax again for a two-year period. The tax applies to our listed medical device products, which include the nCounter Dx Analysis System and Prosigna. The Budget Control Act of 2011, contained automatic spending cuts to the federal budget known as sequestration. As a result of sequestration, Medicare payments are reduced by 2% per year. For Prosigna, pricing changes can occur through the annual adjustment to the CLFS; this resulted in a 10% reduction in the Medicare reimbursement price for Prosigna starting on January 1, 2018 and future 10% reductions in 2019 and 2020. These or any future proposed or mandated reductions in payments may apply to some or all of the clinical laboratory tests that our customers use our technology to deliver to Medicare beneficiaries, and may indirectly reduce demand for our products.

Other significant measures contained in the ACA include coordination and promotion of research on comparative clinical effectiveness of different technologies and procedures, initiatives to revise Medicare payment methodologies, such as bundling of payments across the continuum of care by providers and physicians, and initiatives to promote quality indicators in payment methodologies. The ACA also included significant new fraud and abuse measures, including required disclosures of financial arrangements with physician customers, lower thresholds for violations and increasing potential penalties for such violations.

In addition to the ACA, the effect of which cannot presently be quantified, various healthcare reform proposals have also emerged from federal and state governments. Changes in healthcare policy, such as the creation of broad test utilization limits for diagnostic products in general or requirements that Medicare patients pay for portions of clinical laboratory tests or services received, could substantially impact the sales of our tests, increase costs and divert management's attention from our business. In addition, sales of our tests outside of the United States will subject us to foreign regulatory requirements, which may also change over time.

We cannot predict whether future healthcare initiatives, including potential repeal of the ACA in whole or in part, will be implemented at the federal or state level or in countries outside of the United States in which we may do business, or the effect any future legislation or regulation will have on us. Changes in the United States healthcare industry may result in decreased profits to us, lower reimbursements by payors for our products or reduced medical procedure volumes, all of which may adversely affect our business, financial condition and results of operations.

Risks Related to Intellectual Property

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

We rely on patent protection as well as trademark, copyright, trade secret and other intellectual property rights protection and contractual restrictions to protect our proprietary technologies, all of which provide limited protection and may not adequately protect our rights or permit us to gain or keep any competitive advantage. As of December 31, 2018, we owned or licensed 27 issued U.S. patents and approximately 36 pending U.S. patent applications, including provisional and non-provisional filings. We also owned or licensed approximately 266 pending and granted counterpart applications worldwide, including 118 country-specific validations of 13 European patents. We continue to file new patent applications to protect the full range of our technologies. If we fail to protect our intellectual property, third parties may be able to compete more effectively against us and we may incur substantial litigation costs in our attempts to recover or restrict use of our intellectual property.

Our success depends in part on obtaining patent protection for our products and processes, preserving trade secrets, patents, copyrights and trademarks, operating without infringing the proprietary rights of third parties, and acquiring licenses for technology or products. We cannot assure investors that any of our currently pending or future patent applications will result in issued patents, and we cannot predict how long it will take for such patents to be issued. As the patent and prior art landscape for translational research and molecular diagnostic life science products grows more crowded and becomes more complex we may find it more difficult to obtain patent protection for our products including those related to digital spatial profiling and sequencing, for example. Our existing patents and any future patents we obtain may not be sufficiently broad to prevent others from practicing our technologies or from developing competing products and may therefore fail to provide us with any competitive advantage. Additionally, we cannot assure investors that our currently pending or future patent applications have or will be filed in all of our potential markets. Further, we cannot assure investors that other parties will not challenge any patents issued to us or that courts or regulatory agencies will hold our patents to be valid or enforceable. We cannot guarantee investors that we will be successful in defending challenges made against our patents and patent applications. Any successful third-party challenge to our patents could result in the third party or the unenforceability or invalidity of such patents and could deprive us of the ability to prevent others from using the technologies claimed in such issued patents.

The patent positions of life sciences companies can be highly uncertain and involve complex legal and factual questions for which important legal principles remain unresolved. No consistent policy regarding the breadth of claims allowed in such companies' patents has emerged to date in the United States. Furthermore, in the biotechnology field, courts frequently render opinions that may affect the patentability of certain inventions or discoveries, including opinions that may affect the patentability of methods for analyzing or comparing DNA.

In particular, the patent positions of companies engaged in development and commercialization of genomic diagnostic tests, like Prosigna, are particularly uncertain. Various courts, including the U.S. Supreme Court, have rendered decisions that impact the scope of patentability of certain inventions or discoveries relating to genomic diagnostics. Specifically, these decisions stand for the proposition that patent claims that recite laws of nature (for example, the relationships between gene expression levels and the likelihood of risk of recurrence of cancer) are not themselves patentable unless those patent claims have sufficient additional features that provide practical assurance that the processes are genuine inventive applications of those laws rather than patent drafting efforts designed to monopolize the law of nature itself. What constitutes a "sufficient" additional feature is uncertain. Furthermore, in view of these

decisions, in December 2014 the U.S. Patent and Trademark Office, or USPTO, published revised guidelines for patent examiners to apply when examining process claims for patent eligibility. This guidance was updated by the USPTO in July 2015 and additional illustrative examples provided in May 2016. The USPTO provided additional guidance on examination procedures pertaining to subject matter eligibility in April 2018 and June 2018. The guidance indicates that claims directed to a law of nature, a natural phenomenon, or an abstract idea that do not meet the eligibility requirements should be rejected as non statutory, patent ineligible subject matter; however, method of

treatment claims that practically apply natural relationships should be considered patent eligible. We cannot assure you that our patent portfolio will not be negatively impacted by the current uncertain state of the law, new court rulings or changes in guidance or procedures issued by the USPTO. From time to time, the U.S. Supreme Court, other federal courts, the U.S. Congress or the USPTO may change the standards of patentability and validity of patents within the genomic diagnostic space, and any such changes could have a negative impact on our business.

The laws of some non-U.S. countries do not protect intellectual property rights to the same extent as the laws of the United States, and many companies have encountered significant problems in protecting and defending such rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property protection, particularly those relating to biotechnology, which could make it difficult for us to stop the infringement of our patents. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial cost and divert our efforts and attention from other aspects of our business.

Changes in either the patent laws or in interpretations of patent laws in the United States or other countries may diminish the value of our intellectual property. We cannot predict the breadth of claims that may be allowed or enforced in our patents or in third-party patents. For example:

- We might not have been the first to make the inventions covered by each of our pending patent applications.
- We might not have been the first to file patent applications for these inventions.
- Others may independently develop similar or alternative products and technologies or duplicate any of our products and technologies.
- It is possible that our pending patent applications will not result in issued patents, and even if they issue as patents, they may not provide a basis for commercially viable products, may not provide us with any competitive advantages, or may be challenged and invalidated by third parties.
- We may not develop additional proprietary products and technologies that are patentable.
- The patents of others may have an adverse effect on our business.
- We apply for patents covering our products and technologies and uses thereof, as we deem appropriate. However, we may fail to apply for patents on important products and technologies in a timely fashion or at all.

In addition to pursuing patents on our technology, we take steps to protect our intellectual property and proprietary technology by entering into confidentiality agreements and intellectual property assignment agreements with our employees, consultants, corporate partners and, when needed, our advisors. Such agreements may not be enforceable or may not provide meaningful protection for our trade secrets or other proprietary information in the event of unauthorized use or disclosure or other breaches of the agreements, and we may not be able to prevent such unauthorized disclosure. Monitoring unauthorized disclosure is difficult, and we do not know whether the steps we have taken to prevent such disclosure are, or will be, adequate. If we were to enforce a claim that a third party had illegally obtained and was using our trade secrets, it would be expensive and time consuming, and the outcome would be unpredictable. In addition, courts outside the United States may be less willing to protect trade secrets.

In addition, competitors could purchase our products and attempt to replicate some or all of the competitive advantages we derive from our development efforts, willfully infringe our intellectual property rights, design around our protected technology or develop their own competitive technologies that fall outside of our intellectual property rights. In addition, competitors may develop their own versions of our tests in countries where we did not apply for patents, where our patents have not issued or where our intellectual property rights are not recognized and compete with us in those countries and markets. If our intellectual property is not adequately protected so as to protect our market against competitors' products and methods, our competitive position could be adversely affected, as could our business.

We have not yet registered certain of our trademarks in all of our potential markets. If we apply to register these trademarks, our applications may not be allowed for registration, and our registered trademarks may not be maintained or enforced. In addition, opposition or cancellation proceedings may be filed against our trademark applications and registrations, and our trademarks may not survive such proceedings. If we do not secure registrations for our trademarks, we may encounter more difficulty in enforcing them against third parties than we otherwise would.

To the extent our intellectual property, including licensed intellectual property, offers inadequate protection, or is found to be invalid or unenforceable, we would be exposed to a greater risk of direct competition. If our intellectual

property does not provide adequate protection against our competitors' products, our competitive position could be adversely affected, as could our business. Both the patent application process and the process of managing patent disputes can be time consuming and expensive.

We depend on certain technologies that are licensed to us. We do not control these technologies and any loss of our rights to them could prevent us from selling our products.

We rely on licenses in order to be able to use various proprietary technologies that are material to our business, including our core digital molecular barcoding technology licensed from the Institute for Systems Biology, technology relating to Prosigna licensed from Bioclassifier, LLC, intellectual property relating to a gene signature for lymphoma subtyping from the National Institutes of Health for use in our collaboration with Celgene Corporation, and intellectual property relating to the tumor inflammation signature from Merck. We do not own the patents that underlie these licenses. Our rights to use these technologies and employ the inventions claimed in the licensed patents are subject to the continuation of and compliance with the terms of those licenses.

We may need to license other technologies to commercialize future products. We may also need to negotiate licenses to patents and patent applications after launching any of our commercial products. Our business may suffer if the patents or patent applications are unavailable for license or if we are unable to enter into necessary licenses on acceptable terms.

In some cases, we do not control the prosecution, maintenance, or filing of the patents to which we hold licenses, or the enforcement of these patents against third parties. Some of our patents and patent applications were either acquired from another company who acquired those patents and patent applications from yet another company, or are licensed from a third party. Thus, these patents and patent applications are not written by us or our attorneys, and we did not have control over the drafting and prosecution. The former patent owners and our licensors might not have given the same attention to the drafting and prosecution of these patents and applications as we would have if we had been the owners of the patents and applications and had control over the drafting and prosecution. We cannot be certain that drafting or prosecution of the licensed patents and patent applications by the licensors have been or will be conducted in compliance with applicable laws and regulations or will result in valid and enforceable patents and other intellectual property rights.

Enforcement of our licensed patents or defense of any claims asserting the invalidity of these patents is often subject to the control or cooperation of our licensors. Certain of our licenses contain provisions that allow the licensor to terminate the license upon specific conditions. Therefore, our business may suffer if these licenses terminate, if the licensors fail to abide by the terms of the license or fail to prevent infringement by third parties or if the licensed patents or other rights are found to be invalid. Our rights under the licenses are subject to our continued compliance with the terms of the license, including the payment of royalties due under the license. Because of the complexity of our products and the patents we have licensed, determining the scope of the license and related royalty obligation can be difficult and can lead to disputes between us and the licensor. An unfavorable resolution of such a dispute could lead to an increase in the royalties payable pursuant to the license or termination of the license. If a licensor believed we were not paying the royalties due under the license or were otherwise not in compliance with the terms of the license, the licensor might attempt to revoke the license. If such an attempt were successful, we might be barred from producing and selling some or all of our products.

In addition, certain of the patents we have licensed relate to technology that was developed with U.S. government grants. Federal regulations impose certain domestic manufacturing requirements with respect to some of our products embodying these patents.

Involvement in lawsuits to protect or enforce our patents and proprietary rights, to determine the scope, coverage and validity of others' proprietary rights, or to defend against third-party claims of intellectual property infringement, could be time-intensive and costly and may adversely impact our business or stock price.

We have received notices of claims of infringement and misappropriation or misuse of other parties' proprietary rights in the past and may from time to time receive additional notices. Some of these claims have led and may lead to litigation. We cannot assure investors that we will prevail in such actions, or that other actions alleging misappropriation or misuse by us of third-party trade secrets, infringement by us of third-party patents and trademarks or other rights, or the validity of our patents, trademarks or other rights, will not be asserted or prosecuted against us. Litigation may also be necessary for us to protect or enforce our patent and proprietary rights, defend against third-party claims or to determine the scope, coverage and validity of the proprietary rights of others. Litigation could result in substantial legal fees and could adversely affect the scope of our patent protection and reduce our ability to compete in the marketplace. The outcome of any litigation or other proceeding is inherently uncertain and might not

be favorable to us. If we resort to legal proceedings to enforce our intellectual property rights or to determine the validity, scope and coverage of the intellectual property or other proprietary rights of others, the proceedings could be burdensome and expensive, even if we were to prevail. Any litigation that may be necessary in the future could result in substantial costs and diversion of resources and could have a material adverse effect on our business, operating results or financial condition.

Numerous significant intellectual property issues have been litigated, and will likely continue to be litigated, between existing and new participants in our existing and targeted markets. Our success depends in part on our non-infringement of the patents or proprietary rights of third parties. We develop complex products that integrate a wide range of technologies which

may impact our ability to do so clear of third party rights and therefore may need to license other technologies or challenge the scope, coverage and validity of the proprietary rights of others to commercialize future products. As we develop new technologies such as those related to genomic diagnostic tests, digital spatial profiling and sequencing, for example, and move into new markets and applications for our products, we expect incumbent participants in such markets may assert their patents and other proprietary rights against us as part of a business strategy to slow our entry into such markets, impede our successful competition and/or extract substantial license and royalty payments from us. In addition, we may be unaware of pending third-party patent applications that relate to our technology and our competitors and others may have patents or may in the future obtain patents and claim that use of our products infringes these patents. Our competitors and others may now, and in the future, have significantly larger and more mature patent portfolios than we currently have. In addition, future litigation may involve patent holding companies or other adverse patent owners who have no relevant product revenue and against whom our own patents may provide little or no deterrence or protection. Therefore, our commercial success may depend in part on our non-infringement of the patents or proprietary rights of third parties. We are aware of a third party, Genomic Health, Inc., that has issued patents and pending patent applications in the United States, Europe and other jurisdictions that claim methods of using certain genes that are included in Prosigna. We believe that Prosigna does not infringe any valid issued claim. We could incur substantial costs and divert the attention of our management and technical personnel in defending against any of these claims. Any adverse ruling or perception of an adverse ruling in defending ourselves against these claims could have an adverse impact on our stock price, which may be disproportionate to the actual impact of the ruling itself. Parties making claims against us may be able to obtain injunctive or other relief, which could block our ability to develop, commercialize and sell products, and could result in the award of substantial damages against us. In the event of a successful claim of infringement against us, we may be required to pay damages and obtain one or more licenses from third parties, or be prohibited from selling certain products. We may not be able to obtain these licenses at a reasonable cost, if at all. We could therefore incur substantial costs related to royalty payments for licenses obtained from third parties, which could negatively affect our gross margins. In addition, we could encounter delays in product introductions while we attempt to develop alternative methods or products to avoid infringing third-party patents or proprietary rights. Defense of any lawsuit or failure to obtain any of these licenses on favorable terms could prevent us from commercializing products, and the prohibition of sale of any of our products could materially affect our ability to grow and gain market acceptance for our products.

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

In addition, our agreements with some of our suppliers, distributors, customers, collaborators and other entities with whom we do business require us to defend or indemnify these parties to the extent they become involved in infringement claims against us, including the claims described above. We could also voluntarily agree to defend or indemnify third parties in instances where we are not obligated to do so if we determine it would be important to our business relationships. If we are required or agree to defend or indemnify any of these third parties in connection with any infringement claims, we could incur significant costs and expenses that could adversely affect our business, operating results, or financial condition.

We may be subject to damages resulting from claims that we or our employees have wrongfully used or disclosed alleged trade secrets of our employees' former employers.

Many of our employees were previously employed at universities or other life sciences companies, including our competitors or potential competitors. Although no claims against us are currently pending, we or our employees may be subject to claims that these employees or we have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their former employers. Litigation may be necessary to defend against these claims. If we fail in defending such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights. A loss of key research personnel work product could hamper or prevent our ability to commercialize certain potential products, which could severely harm our business. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to management.

Our products contain third-party open source software components, and failure to comply with the terms of the underlying open source software licenses could restrict our ability to sell our products.

Our products contain software tools licensed by third-party authors under "open source" licenses. Use and distribution of open source software may entail greater risks than use of third-party commercial software, as open source licensors generally do not provide warranties or other contractual protections regarding infringement claims or the quality of the code. Some open source licenses contain requirements that we make available source code for modifications or derivative works we create based upon the type of open source software we use. If we combine our proprietary software with open source software in a certain manner, we could, under certain open source licenses, be required to release the source code of our proprietary software to the

public. This would allow our competitors to create similar products with less development effort and time and ultimately could result in a loss of product sales.

Although we monitor our use of open source software to avoid subjecting our products to conditions we do not intend, the terms of many open source licenses have not been interpreted by U.S. courts, and there is a risk that these licenses could be construed in a way that could impose unanticipated conditions or restrictions on our ability to commercialize our products. Moreover, we cannot assure investors that our processes for controlling our use of open source software in our products will be effective. If we are held to have breached the terms of an open source software license, we could be required to seek licenses from third parties to continue offering our products on terms that are not economically feasible, to re-engineer our products, to discontinue the sale of our products if re-engineering could not be accomplished on a timely basis, or to make generally available, in source code form, our proprietary code, any of which could adversely affect our business, operating results, and financial condition.

We use third-party software that may be difficult to replace or cause errors or failures of our products that could lead to lost customers or harm to our reputation.

We use software licensed from third parties in our products. In the future, this software may not be available to us on commercially reasonable terms, or at all. Any loss of the right to use any of this software could result in delays in the production of our products until equivalent technology is either developed by us, or, if available, is identified, obtained and integrated, which could harm our business. In addition, any errors or defects in third-party software, or other third-party software failures could result in errors, defects or cause our products to fail, which could harm our business and be costly to correct. Many of these providers attempt to impose limitations on their liability for such errors, defects or failures, and if enforceable, we may have additional liability to our customers or third-party providers that could harm our reputation and increase our operating costs.

We will need to maintain our relationships with third-party software providers and to obtain software from such providers that does not contain any errors or defects. Any failure to do so could adversely impact our ability to deliver reliable products to our customers and could harm our results of operations.

Risks Related to Our Common Stock

The price of our common stock may be volatile, and you could lose all or part of your investment.

The trading price of our common stock has fluctuated and may continue to fluctuate substantially. The trading price of our common stock depends on a number of factors, including those described in this “Risk Factors” section, many of which are beyond our control and may not be related to our operating performance. These fluctuations could cause stockholders to lose all or part of their investment in our common stock. Factors that could cause fluctuations in the trading price of our common stock include the following:

- actual or anticipated quarterly variation in our results of operations or the results of our competitors;
- announcements by us or our competitors of new products, significant contracts, commercial relationships or capital commitments;
- failure to obtain or delays in obtaining product approvals or clearances from the FDA or foreign regulators;
- adverse regulatory or reimbursement announcements;
- issuance of new or changed securities analysts’ reports or recommendations for our stock;
- developments or disputes concerning our intellectual property or other proprietary rights;
- commencement of, or our involvement in, litigation;
- market conditions in the research and diagnostics markets;
- manufacturing disruptions;
- any future sales of our common stock or other securities;
- any change to the composition of the board of directors or key personnel;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures or capital commitments;
- general economic conditions and slow or negative growth of our markets; and
- the other factors described in this “Risk Factors” section.

The stock market in general, and market prices for the securities of life sciences and diagnostic companies like ours in particular, have from time to time experienced volatility that often has been unrelated to the operating performance of the

underlying companies. These broad market and industry fluctuations may adversely affect the market price of our common stock, regardless of our operating performance. In several recent situations where the market price of a stock has been volatile, holders of that stock have instituted securities class action litigation against the company that issued the stock. If any of our stockholders were to bring a lawsuit against us, the defense and disposition of the lawsuit could be costly and divert the time and attention of our management and harm our operating results.

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

The trading market for our common stock will be influenced by the research and reports that industry or securities analysts publish about us or our business. If one or more of the analysts who cover us issues an adverse opinion about our company, our stock price would likely decline. If one or more of these analysts ceases coverage of us or fails to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

Future sales of our common stock in the public market could cause our stock price to fall.

Our stock price could decline as a result of sales of a large number of shares of our common stock or the perception that these sales could occur, including by our officers, directors and their respective affiliates. These sales, or the possibility that these sales may occur, also might make it more difficult for us to sell equity securities in the future at a time and at a price that we deem appropriate.

We register the offer and sale of all shares of common stock that we may issue under our equity compensation plans. In addition, in the future, we may issue additional shares of common stock or other equity or debt securities convertible into common stock in connection with a financing, acquisition, litigation settlement, employee arrangements or otherwise. For example, in July and August 2018, we sold an aggregate of 4,600,000 shares of common stock in an underwritten public offering for net proceeds of $53.8 million. Any such future issuance, including any issuances pursuant to our “at the market” equity offering program under our sales agreement with Cowen, could result in substantial dilution to our existing stockholders and could cause our stock price to decline.

We have broad discretion over the use of the proceeds to us from our July 2018 and August 2018 underwritten public offering and our October 2018 term loan agreement and will have broad discretion over the use of the proceeds to us from our “at the market” equity offering program and may apply the proceeds to uses that do not improve our operating results or the value of your securities.

We have broad discretion over the use of proceeds to us from our July 2018 and August 2018 underwritten public offering and our October 2018 term loan agreement and we will have broad discretion to use the net proceeds to us from our “at the market” equity offering program put into place in January 2018, and investors will be relying solely on the judgment of our board of directors and management regarding the application of these proceeds. Although we expect to use the net proceeds from our “at the market” equity offering program for general corporate purposes, investors will not have the opportunity, as part of their investment decision, to assess whether the proceeds are being used appropriately. Our use of the proceeds may not improve our operating results or increase the value of the securities offered pursuant to the foregoing fundraising transactions.

Anti-takeover provisions in our charter documents and under Delaware or Washington law could make an acquisition of us difficult, limit attempts by our stockholders to replace or remove our current management and limit our stock price.

Provisions of our certificate of incorporation and bylaws may delay or discourage transactions involving an actual or potential change in our control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares, or transactions that our stockholders might otherwise deem to be in their best interests. Therefore, these provisions could adversely affect the price of our stock. Among other things, the certificate of incorporation and bylaws:

- permit the board of directors to issue up to 15,000,000 shares of preferred stock, with any rights, preferences and privileges as they may designate;
- provide that the authorized number of directors may be changed only by resolution of the board of directors;
- provide that all vacancies, including newly-created directorships, may, except as otherwise required by law, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- divide the board of directors into three classes;

- provide that a director may only be removed from the board of directors by the stockholders for cause;
- require that any action to be taken by our stockholders must be effected at a duly called annual or special meeting of stockholders and may not be taken by written consent;

- provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide notice in writing in a timely manner, and meet specific requirements as to the form and content of a stockholder's notice;
- prevent cumulative voting rights (therefore allowing the holders of a plurality of the shares of common stock entitled to vote in any election of directors to elect all of the directors standing for election, if they should so choose);
- provide that special meetings of our stockholders may be called only by the chairman of the board, our chief executive officer or by the board of directors; and
- provide that stockholders are permitted to amend the bylaws only upon receiving at least two-thirds of the total votes entitled to be cast by holders of all outstanding shares then entitled to vote generally in the election of directors, voting together as a single class.

In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which generally prohibits a Delaware corporation from engaging in any of a broad range of business combinations with any "interested" stockholder for a period of three years following the date on which the stockholder became an "interested" stockholder. Likewise, because our principal executive offices are located in Washington, the anti-takeover provisions of the Washington Business Corporation Act may apply to us under certain circumstances now or in the future. These provisions prohibit a "target corporation" from engaging in any of a broad range of business combinations with any stockholder constituting an "acquiring person" for a period of five years following the date on which the stockholder became an "acquiring person."

Complying with the laws and regulations affecting public companies increases our costs and the demands on management and could harm our operating results.

As a public company, we incur and will continue to incur significant legal, accounting and other expenses that we did not incur as a private company. We ceased to be an "emerging growth company" on December 31, 2018 and are no longer eligible for reduced disclosure requirements and exemptions applicable to "emerging growth companies." As such, we will be required to hold a say-on-pay vote and a say-on-frequency vote at our 2019 annual meeting of stockholders. We expect that our loss of "emerging growth company" status will require additional attention from management and will result in increased costs to us, which could include higher legal fees, accounting fees and fees associated with investor relations activities, among others. In addition, the Sarbanes-Oxley Act and rules subsequently implemented by the SEC and The Nasdaq Global Market impose numerous requirements on public companies, including requiring changes in corporate governance practices. Also, the Exchange Act requires, among other things, that we file annual, quarterly and current reports with respect to our business and operating results. Our management and other personnel must devote a substantial amount of time to compliance with these laws and regulations. These burdens may increase as new legislation is passed and implemented, including any new requirements that the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 may impose on public companies. These requirements have increased and will likely continue to increase our legal, accounting, and financial compliance costs and have made and will continue to make some activities more time consuming and costly. For example, as a public company it is more difficult and more expensive for us to obtain director and officer liability insurance, and in the future we may be required to accept reduced policy limits and coverage or to incur substantial costs to maintain the same or similar coverage. These rules and regulations could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors or our board committees or as executive officers.

The Sarbanes-Oxley Act requires the SEC to implement new requirements on registrants, and these new requirements that were implemented require, among other things, that we assess the effectiveness of our internal control over financial reporting annually and SEC requirements also require us to assess the effectiveness of our disclosure controls and procedures quarterly. In particular, Section 404 of the Sarbanes-Oxley Act, or Section 404, requires us to perform system and process evaluation and testing of our internal control over financial reporting to allow management to report on, and our independent registered public accounting firm to attest to, the effectiveness of our internal control over financial reporting. As an "emerging growth company," we availed ourselves of the exemption from the requirement that our independent registered public accounting firm attest to the effectiveness of our internal control over financial reporting under Section 404. However, we may no longer avail ourselves of this exemption since we ceased to be an "emerging growth company" on December 31, 2018. As a result, our independent registered public accounting firm is required to undertake an assessment of our internal control over financial reporting and the

cost of our compliance with Section 404 will correspondingly increase. Our compliance with applicable provisions of Section 404 will require that we incur substantial accounting expense and expend significant management time on compliance-related issues as we implement additional corporate governance practices and comply with reporting requirements.

As disclosed in Part II, Item 9A, during the fourth quarter of fiscal 2018, management identified material weaknesses in internal control related to ineffective aspects of its overall control environment related to information technology general

controls. This material weakness contributed to additional material weaknesses, specifically in the areas of: (i) user access and program change management over certain information technology systems and (ii) controls over monitoring of certain access rights related to processing journal entries, both of which support our financial reporting processes. As a result, management concluded that our internal control over financial reporting was not effective as of December 31, 2018. We have taken initial steps to implement remediation efforts; however, there can be no assurance that our efforts to remediate the material weaknesses will be successful or will be completed by the end of our 2019 fiscal year. Pursuing these remediation efforts will result in additional technology and other expenses.

If we are unable to remediate these material weaknesses, or are otherwise unable to maintain effective internal control over financial reporting or disclosure controls and procedures, our ability to record, process and report financial information accurately, and to prepare financial statements within required time periods, could be adversely affected, which could subject us to litigation or investigations requiring management resources and payment of legal and other expenses and negatively impact the price of our common stock. In addition, we could be subject to sanctions or investigations by the SEC or other regulatory authorities, which would require additional financial and management resources.

Furthermore, investor perceptions of our company may suffer as a result of the material weaknesses in our internal controls, and this could cause a decline in the market price of our stock. Irrespective of compliance with Section 404, any failure of our internal control over financial reporting could have a material adverse effect on our stated operating results and harm our reputation. If we are unable to remediate the material weaknesses effectively or efficiently or avoid future material weaknesses, it could harm our operations, financial reporting, or financial results and could result in an adverse opinion on our internal control over financial reporting from our independent registered public accounting firm.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

We currently have three long-term operating lease agreements for 104,538 square feet of space used for general office, laboratory, manufacturing, operations, and research and development purposes in Seattle, Washington. The long-term operating leases expire in 2026 and include options to renew at the then fair market rental for each of the facilities. The lease agreements contain rent abatement periods, scheduled rent increases and provide for tenant improvement allowances. In addition, we have four office leases outside of Seattle, Washington, totaling approximately 3,363 square footage, with terms of three years or less.

Our landlords hold security deposits of approximately $328,000. We believe that our existing facilities are adequate to meet our business requirements for the near-term and that additional space will be available on commercially reasonable terms, if required.

Item 3. Legal Proceedings

We are not engaged in any material legal proceedings. From time to time, we may become involved in litigation relating to claims arising from the ordinary course of business. We believe that there are no claims or actions pending against us currently, the ultimate disposition of which would have a material adverse effect on our consolidated results of operation, financial condition or cash flows.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

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

Market Information

Our common stock is traded on The Nasdaq Global Market under the symbol "NSTG." Trading of our common stock commenced on June 26, 2013 in connection with our initial public offering.

Holders

As of February 28, 2019, there were approximately 24 holders 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.

Performance Graph

This performance graph shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or incorporated by reference into any filing of NanoString Technologies, Inc. under the Securities Act of 1933, as amended, or the Exchange Act, except as shall be expressly set forth by specific reference in such filing.

The following graph compares the performance of our common stock for the periods indicated with the performance of the Nasdaq Composite Index and the Nasdaq Medical Equipment Index. This graph assumes an investment of $100 on December 31, 2013 in each of our common stock, the Nasdaq Composite Index and the Nasdaq Medical Equipment Index, and assumes reinvestment of dividends, if any. The stock price performance shown on the graph below is not necessarily indicative of future stock price performance.

Recent Sales of Unregistered Securities

On November 1, 2018 we issued an aggregate of 5,292 shares of our common stock to a warrant holder upon the exercise of outstanding warrants to purchase an aggregate of 11,837 shares of our common stock pursuant to a net exercise mechanism under the warrants. Each warrant had an exercise price of $8.448 per share. The issuances of these shares were exempt from registration under the Securities Act of 1933, as amended, pursuant to Section 3(a)(9) thereof as an exchange with an existing security holder where no commission or other remuneration is paid or given for soliciting such exchange.

Securities Authorized for Issuance under Equity Compensation Plans

The following table summarizes information about our equity compensation plans as of December 31, 2018. All outstanding awards relate to our common stock.

Plan Category	(a) Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights	(b) Weighted Average Exercise Price of Outstanding Options, Warrants and Rights	(c) Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (a)) [1]
Equity compensation plans approved by security holders:			
2004 Stock Option Plan	695,640	$ 2.95	—
2013 Equity Incentive Plan	5,357,841	11.20	737,732
2013 Employee Stock Purchase Plan	—	N.A.	266,884
Equity compensation plans not approved by security holders[2]:	130,000	5.96	120,000
Total	6,183,481	N.A.	1,124,616

[1] Our 2013 Equity Incentive Plan includes provisions providing for an annual increase in the number of securities available for future issuance on the first day of each fiscal year, equal to the least of: (a) 1,406,250 shares; (b) 5% of the outstanding shares of common stock as of the last day of the immediately preceding fiscal year; and (c) such other amount as the board of directors may determine. Our 2013 Employee Stock Purchase Plan includes provisions providing for an annual increase in the number of securities available for future issuance on the first day of each fiscal year, equal to the least of: (a) 1% of the outstanding shares of common stock on the first day of such fiscal year; (b) 281,250 shares; and (c) such other amount as the board of directors, or a committee appointed by the board of directors, may determine.

[2] On January 15, 2018, our board of directors adopted the NanoString Technologies, Inc. 2018 Inducement Equity Incentive Plan, or the Inducement Plan, and, subject to the adjustment provisions of the Inducement Plan, reserved 250,000 shares of our common stock for issuance pursuant to equity awards granted under the Inducement Plan. The Inducement Plan was adopted without stockholder approval pursuant to Rule 5635(c)(4) and Rule 5635(c)(3) of the Nasdaq Listing Rules. The Inducement Plan provides for the grant of equity-based awards, including nonstatutory stock options, restricted stock units, restricted stock, stock appreciation rights, performance shares and performance units, and its terms are substantially similar to our 2013 Equity Incentive Plan, including with respect to treatment of equity awards in the event of a “merger” or “change in control” as defined under the Inducement Plan, but with such other terms and conditions intended to comply with the Nasdaq inducement award exception or to comply with the Nasdaq acquisition and merger exception. However, our 2013 Equity Incentive Plan permits certain exchange programs (including repricings) without stockholder approval, while the Inducement Plan requires stockholder approval for such exchange programs.

Item 6. Selected Financial Data

The following selected financial data is derived from our audited financial statements and should be read in conjunction with, and is qualified in its entirety by, Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations" and Item 8, "Financial Statements and Supplementary Data" contained elsewhere in this Annual Report on Form 10-K. The selected Consolidated Statements of Operations data for the years ended December 31, 2018, 2017, and 2016 and Consolidated Balance Sheet data as of December 31, 2018 and 2017 have been derived from our audited consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K. The selected Consolidated Statements of Operations data for the years ended December 31, 2015 and 2014 and Consolidated Balance Sheet data as of December 31, 2016, 2015, and 2014 have been derived from our audited consolidated financial statements that are not included in this Annual Report on Form 10-K. Historical results are not necessarily indicative of future results.

	Year Ended December 31,				
	2018	2017	2016	2015	2014
	(In thousands, except per share amounts)				
Consolidated Statements of Operations:					
Revenue[1]	$106,732	$114,905	$86,489	$62,667	$47,593
Costs and expenses:					
Cost of product and service revenue	36,331	31,880	30,245	26,126	21,149
Research and development	61,599	46,888	34,720	24,597	21,404
Selling, general and administrative	78,195	74,334	62,700	53,186	51,063
Total costs and expenses	176,125	153,102	127,665	103,909	93,616
Loss from operations	(69,393)	(38,197)	(41,176)	(41,242)	(46,023)
Other income (expense):					
Interest income	1,331	809	390	233	272
Interest expense	(7,431)	(6,153)	(5,672)	(4,017)	(4,140)
Other income (expense)	(1,658)	183	(515)	(389)	(147)
Total other income (expense)	(7,758)	(5,161)	(5,797)	(4,173)	(4,015)
Net loss before provision for income taxes	(77,151)	(43,358)	(46,973)	(45,415)	(50,038)
Provision for income taxes	(249)	(204)	(116)	(166)	—
Net loss	$(77,400)	$(43,562)	$(47,089)	$(45,581)	$(50,038)
Net loss per share—basic and diluted	$(2.78)	$(1.84)	$(2.34)	$(2.40)	$(2.80)
Weighted-average shares used in computing basic and diluted net loss per share	27,883	23,731	20,116	19,027	17,839

	As of December 31,				
	2018	2017	2016	2015	2014
Consolidated Balance Sheet Data:					
Cash, cash equivalents and short-term investments	$93,997	$77,555	$74,036	$49,044	$72,225
Working capital	88,592	86,002	77,402	61,882	76,411
Total assets	147,558	136,762	126,373	92,869	102,068
Long-term debt and lease financing obligations, net of discounts	58,396	48,931	47,424	41,226	30,246
Total stockholders' equity	$36,869	$40,109	$12,305	$20,215	$44,813

[1]Amounts have not been retrospectively modified to reflect the adoption of Accounting Standard Update No. 2014-09, Revenue from Contracts with Customers, for the years ended December 31, 2014, 2015, 2016 and 2017.

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

You should read the following discussion and analysis together with the financial statements and the related notes to those statements included elsewhere in this report. This discussion contains forward-looking statements that involve risks and uncertainties. As a result of many factors, such as those set forth in the section of this report captioned "Risk Factors" and elsewhere in this report, our actual results may differ materially from those anticipated in these forward-looking statements. Throughout this discussion, unless the context specifies or implies otherwise, the terms "NanoString", "we", "us" and "our" refer to NanoString Technologies, Inc. and its subsidiaries.

Overview

We develop, manufacture and sell products that unlock scientifically valuable and clinically actionable information from minute amounts of biological material. Our core technology is a unique, proprietary optical barcoding chemistry that enables the labeling and counting of single molecules. This proprietary chemistry may reduce the number of steps required to conduct certain types of scientific experiments and allow for multiple experiments to be conducted at once. As a result, we are able to develop tools that are easier for researchers to use and that may generate faster and more consistent scientific results.

We use our technology to develop tools for scientific research, primarily in the fields of genomics and proteomics, and also to develop clinical diagnostic tests. We currently have one commercially available product platform, our nCounter Analysis System instruments and related consumables. We market and sell our instruments and related consumables to researchers in academic, government, and biopharmaceutical laboratories for research use and to clinical laboratories and medical centers for diagnostic use, both through our direct sales force and through selected distributors in certain international markets. As of December 31, 2018, we had an installed base of approximately 730 nCounter systems, which our customers have used to publish more than 2,300 peer-reviewed papers.

We derive a substantial majority of our revenue from the sale of our products, which consist of our nCounter instruments and related proprietary consumables. Our instruments are designed to work only with our consumable products. Accordingly, as the installed base of our instruments grows, we expect recurring revenue from consumable sales to become an increasingly important driver of our operating results. We also derive revenue from processing fees related to proof-of-principle studies we conduct for potential customers and extended service contracts for our nCounter Analysis Systems. Additionally, we generate revenue through product development collaborations.

We use third-party contract manufacturers to produce the instruments comprising our nCounter Analysis System. We manufacture consumables at our Seattle, Washington facility. This operating model is designed to be capital efficient and to scale efficiently as our product volumes grow. We focus a substantial portion of our resources on developing new technologies, products and solutions. We invested $61.6 million, $46.9 million and $34.7 million in 2018, 2017, and 2016, respectively, in research and development and intend to continue to make significant investments in research and development.

We have discovered other novel applications that utilize our proprietary barcoding chemistry, and we have two new product platforms under development. Following completion of product development, each of these new systems is expected to be commercialized as a new instrument along with associated consumables.

The first new platform, our GeoMx Digital Spatial Profiling, or GeoMx DSP system, is designed to enable the field of spatial genomics. While nCounter and other existing technologies analyze gene activity as a whole throughout the totality of a biological sample, GeoMx DSP is used to analyze specifically selected regions of a biological sample in order to see how gene activity or protein levels might vary across those regions or in certain cell types. In advance of the launch of the commercial version of GeoMx DSP, we have provided early access to the system's capabilities by offering selected customers the opportunity to send biological samples to our Seattle facility to be tested by us on prototype instruments. To date, we have conducted over 70 projects for approximately 50 customers pursuant to this Technology Access Program, or TAP. In addition, in the third quarter of 2018 we announced the GeoMx Priority Site, or GPS, Program. The GPS Program is designed to provide customers the opportunity to be among the first to receive a GeoMx DSP instrument following its commercial launch, as well as advanced service and support. Inclusion in the GPS Program has also provided researchers the opportunity to begin generating data on samples through our TAP service. As of December 31, 2018, we have received over 30 orders for GeoMx DSP pursuant to our GPS Program. The full commercial launch of GeoMx DSP instruments and consumables is expected to commence during the first half of 2019, with installations of commercial instruments expected to commence in the second half of 2019.

The second new platform, our Hyb & Seq molecular profiling system, is designed to use a modified version of our proprietary chemistry to determine and analyze gene sequences within a biological sample, or to potentially profile the activity of an even greater number of genes as compared to our nCounter Analysis System. Hyb & Seq is designed to determine gene sequences using a work flow with fewer steps as compared to currently available gene sequencing technologies. Hyb & Seq is expected to become commercially available during 2021.

In August 2017, we entered into a collaboration agreement with Lam Research Corporation, or Lam, to support the development of our Hyb & Seq product candidate and related assays. For additional information regarding this development collaboration agreement, see the section of this report captioned “Business—Collaborations—Lam Research Corporation”.

In March 2014, we entered into a collaboration agreement with Celgene Corporation, or Celgene, to develop, seek regulatory approval for, and commercialize a companion diagnostic assay for use in screening patients with Diffuse Large B-Cell Lymphoma. For additional information regarding the collaboration agreement, see the section of this report captioned “Business—Collaborations—Celgene Corporation”.

In May 2015, we entered into a clinical research collaboration agreement with Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc., or Merck, to develop an assay intended to optimize immune-related gene expression signatures and evaluate the potential to predict benefit from Merck’s anti-PD-1 therapy, KEYTRUDA, in multiple tumor types. In October 2017, we were notified by Merck of the decision not to pursue regulatory approval of the companion diagnostic test for KEYTRUDA. As a result, in August 2018, we and Merck agreed to mutually terminate our development collaboration agreement, effective as of September 30, 2018, following the completion of certain close-out activities.

In January 2016, we entered into a collaboration with Medivation, Inc. and Astellas Pharma Inc. to pursue the translation of a novel gene expression signature algorithm discovered by Medivation into a companion diagnostic assay using the nCounter Analysis System. In September 2016, Medivation was acquired by Pfizer, Inc., or Pfizer, and became a wholly owned subsidiary of Pfizer. In May 2017, we received notification from Pfizer and Astellas terminating the collaboration agreement as a result of a decision to discontinue the related clinical trial.

Our product and service revenue increased 16.0% to $83.5 million in 2018, compared to $72.0 million in 2017. The increase was driven primarily by increased revenue from consumables and Prosigna, and increased revenue from service contracts associated with our growing installed base of nCounter Analysis Systems and for our GeoMx DSP technology access service.

Our total revenue in 2018 was $106.7 million compared to $114.9 million in 2017 and $86.5 million in 2016. Our total revenue has varied more significantly as compared to our product and service revenue, and may do so in future periods, as a result of the timing of revenue recognition associated with our collaboration agreements. Revenue recognition relating to these agreements, which is recorded as collaboration revenue, primarily consists of recognizing deferred revenue relating to cash payments received previously from our collaborators. Collaboration revenue recognized may vary significantly depending on the timing and cost of certain research and development activities relating to a collaboration, the expected time frame for completing certain collaboration activities, the outcome of research and development activities being conducted pursuant to a collaboration, the contractual terms of a particular collaboration agreement and other factors.

Historically, we have generated a substantial majority of our revenue from sales to customers in North America; however, we expect sales in other regions may increase over time. We have never been profitable and had net losses of $77.4 million, $43.6 million, and $47.1 million in 2018, 2017, and 2016, respectively. As of December 31, 2018, our accumulated deficit was $391.3 million.

Key Financial Metrics

We are organized as, and operate in, one reportable segment: the development, manufacture and commercialization of instruments, consumables and services for efficiently profiling the activity of hundreds of genes and proteins simultaneously from a single tissue sample. Our chief operating decision maker is the chief executive officer, who manages our operations and evaluates our financial performance on a total company basis. Our principal operations and decision-making functions are located at our corporate headquarters in the United States.

Revenue

We generate revenue from the sale of our products and related services. For a description of our revenue recognition policies, see the section of this report captioned “—Critical Accounting Policies and Significant Estimates—Revenue Recognition.”

Product Revenue

Our product revenue consists of sales of our nCounter Analysis Systems and related consumables, including Prosigna in vitro diagnostic kits. Our nCounter MAX Analysis System typically consists of one nCounter Digital Analyzer and

one nCounter Prep Station, having a U.S. list price of $235,000. The U.S. list price of the similarly configured nCounter Dx Analysis System is $265,000, or $285,000 if fully enabled to run Prosigna. Our newly developed nCounter SPRINT Profiler has a reduced footprint and combines the function of the prep station with the digital analyzer in a single instrument. It has a U.S. list price of $149,000. Outside the United States, depending on the country, list prices are generally higher. In certain cases,

customers may pay less than the list price for our various nCounter instruments. For example, some of our systems are sold to customers through independent distributors, and these distributors may purchase systems from us at a discount to list price. Our customer base is primarily composed of academic institutions, government laboratories, biopharmaceutical companies and clinical laboratories that perform analyses or testing using our nCounter Analysis System and purchase related consumables, potentially including Prosigna kits.

For our research customers, related consumables include gene and protein expression analysis panels, which are standardized and pre-manufactured, custom CodeSets, which we manufacture to the specific requirements of an individual researcher, and Master Kits, cartridges and reagents, which are ancillary reagents, cartridges, tips and reagent plates required to setup and process samples in our instruments. For our clinical laboratory customers, related consumables include our Prosigna in vitro diagnostic kits. Our average consumables revenue per installed system was approximately $80,000 for the year ended December 31, 2018.

The list price of a Prosigna test in the United States and Europe is $2,080 and €1,550 per patient, respectively. Although the price of Prosigna and our additional future diagnostic products will depend on many factors, including whether and how much third-party payors will reimburse laboratories for conducting such tests, we expect that the gross margin for our diagnostic kits may be higher than for our research consumables. We sell Prosigna kits to our lab customers, who will be responsible for providing the testing service and contracting and billing payors. Prosigna kits are sold to clinical laboratories on a fixed dollars-per-kit basis, which does not expose us to direct third-party payor reimbursement risk. However, we provide customary volume discounts, and in some cases, introductory pricing during the period in which third-party payor reimbursement is being established. As a result, the average selling price per Prosigna test is lower than list price.

Service Revenue

Service revenue consists of fees associated with service contracts and conducting proof-of-principle studies. We include a one-year warranty with the sale of our instruments and offer service contracts, which are purchased by a majority of our customers. We selectively provide proof-of-principle studies to prospective customers in order to help them better understand the benefits of the nCounter Analysis System, and in some cases allow customers early access to technologies under development, such as our GeoMx DSP system, for which we generate data and perform analysis services on their behalf.

Collaboration Revenue

Collaboration revenue has been derived primarily from our collaborations with Lam, Celgene and Merck and historically, our terminated collaboration with Medivation and Astellas. As of December 31, 2018, we have received a total of $106.8 million from these collaboration agreements, of which $22.8 million, $42.3 million, and $16.7 million has been recorded as collaboration revenue in 2018, 2017, and 2016, respectively, with the remainder recorded as deferred revenue and customer deposits, which will be recognized as collaboration revenue over our remaining development performance period for each of the agreements. Collaboration revenue also includes revenue recognized under several smaller collaborations.

Revenue by Geography

We sell our products through our own sales forces in the United States, Canada, Singapore, Israel and certain European countries. We sell through distributors in other parts of the world. As we have expanded our European direct sales force and entered into agreements with distributors of our products in Europe, the Middle East, Asia Pacific and South America, the amount of revenue generated outside of North America has generally increased, although there have been significant quarter-to-quarter fluctuations. In the future, we intend to continue to expand our sales force and establish additional distributor relationships outside the United States to better access international markets.

The following table reflects total revenue by geography based on the geographic location of our customers, distributors and collaborators. For sales to distributors, their geographic location may be different from the geographic locations of the ultimate end customer. Americas consists of the United States, Canada, Mexico and South America; and Asia Pacific includes Japan, China, South Korea, Singapore, Malaysia, India and Australia.

	Year Ended December 31,		
	2018	2017	2016
	(Dollars in thousands)		

Americas	$74,137	70	%	$86,099	75	%	$60,330	70	%
Europe & Middle East	25,715	24	%	21,791	19	%	18,497	21	%
Asia Pacific	6,880	6	%	7,015	6	%	7,662	9	%
Total revenue	$106,732	100	%	$114,905	100	%	$86,489	100	%

Most of our revenue is denominated in U.S. dollars. Our expenses are generally denominated in the currencies in which our operations are located, which is primarily in the United States. Changes in foreign currency exchange rates have not materially affected us to date; however, they may become material to us in the future as our operations outside of the United States expand.

Cost of Product and Service Revenue

Cost of product and service revenue consists primarily of costs incurred in the production process, including costs of purchasing instruments from third-party contract manufacturers, consumable component materials and assembly labor and overhead, installation, warranty, service and packaging and delivery costs. In addition, cost of product and service revenue includes royalty costs for licensed technologies included in our products, provisions for slow-moving and obsolete inventory and stock-based compensation expense. We provide a one-year warranty on each nCounter Analysis System sold and establish a reserve for warranty repairs based on historical warranty repair costs incurred. The average unit cost of our instruments has declined in the current year as compared to prior years primarily as a result of increased placements of our lower-cost nCounter SPRINT Profiler. We expect the average unit costs of our nCounter instruments to continue to decline as we expand our market opportunity among smaller research laboratories and sell a higher proportion of SPRINT systems. We expect the unit costs of consumable products to decline as a result of our ongoing efforts to improve our manufacturing processes and expected increases in production volume and yields. Although the unit costs of our custom CodeSets vary, they are generally higher as a percentage of the related revenue than our standard panel products and in vitro Prosigna diagnostic kits.

Operating Expenses

Research and Development

Research and development expenses consist primarily of salaries and benefits, occupancy costs, laboratory supplies, engineering services, consulting fees, costs associated with licensing molecular diagnostics rights and clinical study expenses to support the regulatory approval or clearance of diagnostic products. We have made substantial investments in research and development since our inception. Our research and development efforts have focused primarily on the tasks required to enhance our technologies and to support development and commercialization of new and existing products and applications. We believe that our continued investment in research and development is essential to our long-term competitive position and expect to continue to make investments in research and development activities at levels consistent with our current levels. In particular, following our entry into the Lam collaboration in August 2017, which provides up to $50.0 million of funding for our Hyb & Seq program, we have experienced a substantial increase in related research and development expenses in 2018 and we may continue to invest at similar levels in future periods as we continue our development activities related to the Hyb & Seq platform. To date, we have found that it has been effective for us to manage our research and development activities on a departmental basis. Accordingly, other than pursuant to terms of certain of our collaborations, we have neither required employees to report their time by project nor allocated our research and development costs to individual projects. Research and development expense by functional area was as follows:

	Year Ended December 31,		
	2018	2017	2016
	(In thousands)		
Platform technology	$28,634	$16,645	$10,312
Manufacturing process development	4,689	3,025	2,582
Life sciences research products and applications	10,107	7,933	6,298
Diagnostic product development	7,004	7,161	6,648
Clinical, regulatory and medical affairs	5,439	7,036	5,111
Facility allocation	5,726	5,088	3,769
Total research and development expense	$61,599	$46,888	$34,720

Selling, General and Administrative

Selling, general and administrative expense consists primarily of costs for our sales and marketing, finance, human resources, information technology, business development, legal and general management functions, as well as professional fees for legal, consulting and accounting services. We expect selling, general and administrative expenses to increase in future periods as the number of sales, technical support and marketing and administrative personnel grows to support the expected introduction of new products and product platforms, including our GeoMx DSP and Hyb and Seq product candidates, as well as the general broadening of our customer base and growth of our existing nCounter business. Legal, accounting and compliance costs have increased as a result of our being a public company, and we expect them to continue to increase as our business grows.

Factors Affecting Our Performance

Instrument Installed Base

Our future financial performance will be driven in large part by the rate of sales of our nCounter Analysis Systems, as well as our ability to drive consumable sales through our installed base of these systems. As of December 31, 2018, we had an installed base of approximately 730 nCounter Analysis Systems, which we count based on the number of nCounter SPRINT, MAX or FLEX Profilers sold, given that a system may couple one system with multiple nCounter Prep Stations. In the year ended December 31, 2018 our annualized rate of consumable sales per installed system, including sales of nCounter consumables and Prosigna, was approximately $80,000.

In addition to growth related to our nCounter platform of instruments and consumables, we plan to grow our system and consumable sales in the coming years through the introduction of new product platforms such as our GeoMx DSP and Hyb & Seq product candidates.

In addition to seeking to increase sales of our existing nCounter platform and consumables and from our expected new product platform introductions, we will continue to employ other growth strategies, including expanding our sales channel in both direct and distributor territories, developing new consumable content for our nCounter platform and enhancing certain features of our nCounter platform. As part of this strategy, in both 2017 and 2018, we added incremental sales territories and augmented our field sales team, and have continued to grow our base of distributors. As our installed base of instruments grows, we solicit feedback from our customers and focus our research and development efforts on improving our nCounter Analysis System or enabling applications, which in turn helps to drive additional sales of our instruments and consumables.

Our sales process involves numerous interactions with multiple individuals within an organization, and often includes in-depth analysis by potential customers of our products, performance of proof-of-principle studies, preparation of extensive documentation and a lengthy review process. As a result of these factors, the capital investment required in purchasing our instruments and the budget cycles of our customers, the time from initial contact with a customer to our receipt of a purchase order can vary significantly, and may be up to 12 months or longer. Given the length and uncertainty of our sales cycle, we will likely experience fluctuations in our future instrument sales on a period-to-period basis.

Recurring Consumables Revenue

Our instruments are designed to be used only with our consumables. This closed system model generates recurring revenue from each instrument we sell. Management focuses on recurring consumable revenue per system as an indicator of the continuing value generated by each system. We calculate recurring consumables revenue per system (also known as pull-through) quarterly by dividing consumables and in vitro diagnostic kits revenue recognized in a particular quarter (other than consumables revenue related to proof-of-principle studies) by the total number of nCounter Analysis Systems installed as of the last day in the immediately preceding quarter. Historically, a large majority of our systems and related consumables have been sold to research customers. Our average annualized consumables revenue per installed system was approximately $80,000 for the year ended December 31, 2018.

As the installed base of the nCounter Analysis Systems expands, consumables revenue is expected to increase and over time should continue to be an increasingly important contributor to our total revenue. Our consumables revenue per system installed may fluctuate in the future, reflecting the mix of our installed instruments, and potential shifts in the mix, or type, of consumables sold to our installed customer base. Additionally, we expect Prosigna in vitro diagnostic kit revenue to contribute an increasing amount of recurring revenue as we install more diagnostic systems, Prosigna is included in important breast cancer treatment guidelines and reimbursement by third-party payors

becomes more broadly available. In 2017 we launched our “360” panels for use in breast cancer, immuno-oncology and hematology. In 2018, we expanded the number of panels in oncology, specifically focused on breast cancer and immuno-oncology, and also added panels in two new research areas, neuroscience and autoimmunity. In 2019, we intend to continue to expand our nCounter panels, primarily focused on neuroscience and immune-related diseases. The introduction of new applications has the potential to further increase our

consumables revenue stream. Over time, we believe that consumables revenue may be subject to less period-to-period fluctuation than our instrument sales revenue.

Revenue Mix and Gross Margin

Our product revenue is derived from sales of nCounter Analysis System instruments and related consumables, including Prosigna in vitro diagnostic kits. Generally, our consumables have higher gross margins than our instruments. There may be fluctuations in sales mix between instruments and consumables from period to period. For example, during 2018 our total product and service revenue increased by 16%, which included 18% growth in revenues related to our consumables, including in vitro diagnostic kits, compared to 2017 and 3% growth in our instrument sales compared to 2017. However, during 2017 our total product and service revenues increased by 4%, which included an 11% decline in instrument sales compared to 2016. This decline in instrument sales was offset by revenue growth from our consumables, including Prosigna in vitro diagnostic kits, and increased revenue from service contracts resulting from our growing installed base of nCounter Analysis Systems. Although future results may vary period to period, over time, as our installed base of systems grows, consumables may continue to constitute a larger percentage of total product revenue, which would tend to increase our gross margins. Such gross margin increases may be offset by the mix of consumable products sold, or in the event we introduce new instrument product platforms that become increasing components of our product sales, such as GeoMx DSP or Hyb and Seq. In addition, both the average selling price and manufacturing cost of our instruments has decreased with the introduction of the nCounter SPRINT Profiler and this trend may continue with future generations of our nCounter Analysis System. For example, although we sold approximately 12% more systems in 2018 compared to 2017, our instrument revenue only increased 3%. This was largely due to substantially increased sales of lower priced SPRINT systems in 2018. Future instrument selling prices and gross margins may fluctuate as we grow our volume of distribution partners in geographies outside of the United States, as we introduce new products and reduce our product costs, and from variability in the timing of new product introductions.

We derive service revenue from service contracts, which are purchased by a majority of our customers. Additionally, we selectively provide proof-of-principle studies in connection with prospective sales to customers to demonstrate the performance of our nCounter Analysis System. Collaboration revenue is primarily derived from our diagnostic and other collaborations with Celgene, Merck, Lam, and historically, our collaboration with Medivation and Astellas.

The following table reflects the breakdown of revenue in absolute dollars and as percentage of total revenue.

	Year Ended December 31,					
	2018		2017		2016	
	(Dollars in thousands)					
Product revenue:						
Instruments	$21,441	20 %	$20,839	18 %	$24,229	28 %
Consumables	43,847	41 %	38,311	33 %	37,545	43 %
In vitro diagnostic kits	9,445	9 %	6,745	6 %	4,168	5 %
Total product revenue	74,733	70 %	65,895	57 %	65,942	76 %
Service revenue	8,790	8 %	6,115	5 %	3,192	4 %
Total product and service revenue	83,523	78 %	72,010	62 %	69,134	80 %
Collaboration revenue	23,209	22 %	42,895	38 %	17,355	20 %
Total revenue	$106,732	100%	$114,905	100%	$86,489	100%

Results of Operations

Comparison of Years Ended December 31, 2018 and 2017

Revenue

	Year Ended December 31,		Change	
	2018	2017	Dollars	Percentage
	(Dollars in thousands)			
Product revenue:				
Instruments	$21,441	$20,839	$602	3%
Consumables	43,847	38,311	5,536	14%
In vitro diagnostic kits	9,445	6,745	2,700	40%
Total product revenue	74,733	65,895	8,838	13%
Service revenue	8,790	6,115	2,675	44%
Total product and service revenue	83,523	72,010	11,513	16%
Collaboration revenue	23,209	42,895	(19,686)	(46)%
Total revenue	$106,732	$114,905	$(8,173)	(7)%

Instrument revenue for the year ended December 31, 2018 increased as compared to the prior year, due primarily to an increase in the number of instruments sold. The magnitude of the instrument revenue increase was partially offset by a shift in sales mix towards our SPRINT instruments, which generally have lower average selling prices than our MAX and FLEX instruments. Consumables revenue increased for the year ended December 31, 2018, primarily as a result of our growing installed base of nCounter Analysis Systems, as well as growth in sales of our standardized panel consumable products. In vitro diagnostic kit revenue represents sales of Prosigna assays, which increased for the year ended December 31, 2018 as more testing providers commenced providing services and testing volumes increased, most significantly in territories outside of the United States. The increase in service revenue was primarily related to an increase in the number of installed instruments covered by service contracts, and also increases in revenue generated from technology access fees, particularly fees related to services offered pursuant to our GeoMx DSP Technology Access Program. Our product and service revenue may continue to increase in future periods as a result of our increased investments in sales and marketing activities, the growth in sales of our nCounter consumable products as driven by our increasing installed base of nCounter instruments, the introduction of new nCounter consumable products, the continued sale of additional nCounter instruments and the potential commercial launch of new product platforms such as our GeoMx DSP and Hyb & Seq product candidates. As an offset to our anticipated expenses relating to the development of our Hyb & Seq platform, Lam has committed to provide up to $50.0 million in funding, of which $35.1 million has been funded as of December 31, 2018.

Collaboration revenue decreased for the year ended December 31, 2018 as compared to the prior year, due primarily to the termination of our collaboration with Medivation and Astellas in 2017. The termination resulted in the recognition of deferred collaboration revenue of $11.5 million for the year ended December 31, 2017, which represented all of the remaining deferred revenue relating to the terminated collaboration. In addition, the scope of our collaboration with Merck changed during the fourth quarter of 2017, resulting in a further reduction of collaboration revenue in 2018 as compared to the same period in 2017. These decreases were partially offset by collaboration revenue generated from our agreements with Lam and Celgene. Our collaboration agreement with Lam was entered into during the third quarter of 2017 and represented $18.6 million of collaboration revenue for the year ended December 31, 2018. Collaboration revenue related to our agreement with Lam was $3.7 million for the year ended December 31, 2017.

Cost of Product and Service Revenue; Gross Profit; and Gross Margin

	Year Ended December 31,		Change	
	2018	2017	Dollars	Percentage
	(Dollars in thousands)			
Cost of product and service revenue	$36,331	$31,880	$4,451	14%
Product and service gross profit	$47,192	$40,130	$7,062	18%
Product and service gross margin	57 %	56 %		

For the year ended December 31, 2018, cost of product and service revenue increased as compared to the same periods in 2017, due to higher volumes of instruments and consumables sold, including our Prosigna in vitro diagnostic kits, as well as increased volume of service contracts associated with our growing installed base of nCounter instruments. Our gross margin on product and service revenue for the year ended December 31, 2018 increased compared to the prior year primarily as a result of increased consumable revenue as a percentage of our overall sales mix, including sales of our Prosigna in vitro diagnostic kits,

which generally have higher gross margins than our instrument placements, as well as increasing sales of our nCounter panel products as a percentage of our consumables revenue. The favorable mix shift towards consumables comprising a higher percentage of our total product and service revenues was partially offset by an increase in the number of lower margin SPRINT instrument sales, and modestly lower average selling prices realized across all instrument sales, as compared to the prior year. In addition, our gross margin during the year ended December 31, 2018 was also impacted by increases in outside consulting and other costs relating to quality assurance and system requirements for diagnostic products related manufacturing.

We expect our cost of product and service revenue to increase in future periods, primarily due to our expected growth in product and service revenue. We expect our gross margin on product and service revenue may fluctuate in future periods, depending upon our mix of instrument sales, from which we typically record lower gross margins, as compared to our sales of consumable products or services, the impact of the launch, and any sales achieved, of our new product platforms such as our GeoMx or Hyb & Seq product platforms, which during any initial launch may impact our mix of instruments sold as compared to consumables, and potential expenses we may incur for regulatory compliance, quality assurance or related to the expansion of our manufacturing capacity. Any costs related to collaboration revenue are included in research and development expense.

Research and Development Expense

	Year Ended December 31,		Change	
	2018	2017	Dollars	Percentage
	(Dollars in thousands)			
Research and development expense	$61,599	$46,888	$14,711	31%

The increase in research and development expense for the year ended December 31, 2018 was primarily attributable to an increase in staffing and personnel-related costs of $6.2 million, as well as increased supply costs of $4.1 million and professional fees of $3.6 million. These increased costs were incurred primarily to support the development of our GeoMx DSP and Hyb & Seq platforms.

We expect that research and development costs may continue to increase in future periods to support remaining product development activities relating to our GeoMx DSP and Hyb & Seq platforms.

Selling, General and Administrative Expense

	Year Ended December 31,		Change	
	2018	2017	Dollars	Percentage
	(Dollars in thousands)			
Selling, general and administrative expense	$78,195	$74,334	$3,861	5%

The increase in selling, general and administrative expense for the year ended December 31, 2018 was primarily attributable to an increase in staffing and personnel-related costs of $2.6 million to support our sales, marketing and administrative functions, as well as an increase in professional fees of $1.1 million related to legal, consulting and other costs associated with activities and implementation of certain processes relating to our compliance with the Sarbanes Oxley Act. These increases were partially offset by lower sales and marketing costs of $1.0 million related to fewer promotional events and other external activities.

We expect selling, general and administrative expense to increase in future periods as the number of sales, technical support and marketing and administrative personnel grows to support the expected growth in our existing lines of business, as well as to support the introduction of new products and product platforms, including our new GeoMx DSP and Hyb & Seq product platforms.

Other Income (Expense)

	Year Ended December 31,		Change	
	2018	2017	Dollars	Percentage
	(Dollars in thousands)			
Interest income	$1,331	$809	$522	65%
Interest expense	(7,431)	(6,153)	(1,278)	21%
Other income (expense), net	(1,658)	183	(1,841)	(1,006)%
Total other income (expense), net	$(7,758)	$(5,161)	$(2,597)	50%

Interest expense increased for the year ended December 31, 2018 due primarily to having a higher average balance of long-term debt outstanding during 2018 which was $52.5 million as compared to $48.6 million for 2017. In addition, as a result of the replacement of our long-term debt facility with CRG, we incurred a loss on extinguishment of the original long-term debt

which totaled $0.8 million. Interest income increased for the year ending December 31, 2018, due to higher interest rates as well as an increased average investment balance during the year. Other income (expense), net is primarily related to estimated costs for certain state and local taxes and to realized and unrealized gains or losses associated with foreign currency transactions primarily denominated in the Euro and British Pounds, both of which generally weakened relative to the U.S. Dollar for the year ending December 31, 2018, compared to the prior year.

Comparison of Years Ended December 31, 2017 and 2016

Revenue

	Year Ended December 31,		Change	
	2017	2016	Dollars	Percentage
	(Dollars in thousands)			
Product revenue:				
Instruments	$20,839	$24,229	$(3,390)	(14)%
Consumables	38,311	37,545	766	2%
In vitro diagnostic kits	6,745	4,168	2,577	62%
Total product revenue	65,895	65,942	(47)	—%
Service revenue	6,115	3,192	2,923	92%
Total product and service revenue	72,010	69,134	2,876	4%
Collaboration revenue	42,895	17,355	25,540	147%
Total revenue	$114,905	$86,489	$28,416	33%

Instruments revenue decreased for the year ended December 31, 2017, due primarily to fewer instruments sold during the year, and to a lesser extent, the realization of a lower average price per instrument sold. We sold approximately 125 instruments in 2017, down from approximately 140 instruments in 2016. While our mix of instruments sold remained relatively consistent year over year, the average price per instrument sold in 2017 was impacted by a greater proportion of instruments being sold through distributors during 2017, for which we typically record lower selling prices, as well as lower prices recorded related to sales of our nCounter SPRINT Profilers as compared to 2016.

Consumables revenue increased during 2017, primarily as a result of our growing installed base of nCounter Analysis Systems, as well as growth in various European markets. In vitro diagnostic kit revenue represents sales of Prosigna assays, which increased as more testing providers came online, and testing volumes increased. The increase in service revenue was primarily related to an increase in the number of instruments covered by service contracts, and also increases in revenue generated from technology access fees, data analysis, and other services related to new potential customers and technologies which are under development. Our product and service revenue may continue to increase in future periods, as a result of our increased investments in sales and marketing activities, the introduction of new nCounter consumable products, and the potential commercial launch of our GeoMx DSP and Hyb & Seq product candidates.

Collaboration revenue increased by $25.5 million in 2017, due largely to changes in estimates related to future costs associated with our collaborations with Merck and Medivation and Astellas. Our collaboration with Medivation and Astellas was terminated during the second quarter of 2017, and during the fourth quarter of 2017, we were notified by Merck of a change in scope associated with planned future regulatory activities. Both of these events resulted in a decrease of the total expected costs associated with the collaborations, and as a result, the completion percentage used in the proportional performance model used for revenue recognition increased substantially. These changes in estimates resulted in an acceleration of revenue recognized during 2017, relative to the original planned project time lines and estimated costs. The addition of our new collaboration agreement with Lam, which was entered into during the third quarter of 2017, also contributed to our increased collaboration revenue in 2017 as compared to the prior year.

Cost of Product and Service Revenue; Gross Profit; and Gross Margin

	Year Ended December 31,		Change	
	2017	2016	Dollars	Percentage
	(Dollars in thousands)			
Cost of product and service revenue	$31,880	$30,245	$1,635	5%
Product and service gross profit	$40,130	$38,889	$1,241	3%

Product and service gross margin	56	%	56	%

For the year ended December 31, 2017, cost of product and service revenue increased due to higher volumes of consumables sold, including our Prosigna in vitro diagnostic kits, as well as increased revenue from service contracts and data analysis services as compared to 2016. These increases were partially offset by the lower volume of instruments sold during the

year. Our gross margin on product and service revenue in 2017 benefited from a shift in revenue mix from instruments to consumables, driven in large part by continued growth in Prosigna in vitro diagnostic kit revenue, the addition of new higher margin service revenue from our GeoMx DSP technology access program, and a lower royalty rate on our license of the foundational nCounter patents due to the achievement of a cumulative revenue milestone that took effect in the third quarter of 2016. These increases were offset by lower average selling prices realized on certain sales of our nCounter Analysis Systems, as a result of selected promotion and sales related activities during the period, the reduction in certain higher gross margin custom consumable orders, and increased reserves for slow-moving inventory. We expect our cost of product and service revenue to increase in future periods, primarily due to our expected continued growth in product and service revenue. We expect our gross margin on product and service revenue to remain stable or potentially increase in future periods, as we increase our sales of consumables through a larger instrument installed base, as we introduce new nCounter consumable products that may have lower gross margins during their initial launch period, and as a greater proportion of nCounter SPRINT Profilers are sold in future periods as a percentage of our total instrument sales. Costs related to collaboration revenue are included in research and development expense.

Research and Development Expense

	Year Ended December 31,		Change	
	2017	2016	Dollars	Percentage
	(Dollars in thousands)			
Research and development expense	$46,888	$34,720	$12,168	35%

The increase in research and development expense in 2017 was primarily attributable to an increase in staffing and personnel-related costs of $6.2 million, as well as increased supply costs of $2.2 million and professional fees of $1.8 million. These increased costs were incurred primarily to support the advancement of our collaborations and technology and product development activities, including GeoMx DSP and Hyb & Seq, product candidates. In addition, facility costs increased by $1.4 million in 2017, due to expansion of our leased space for research and development activities. We expect that research and development costs will continue to increase in future periods in support of remaining development activities relating to our GeoMx DSP product candidate, and as a result of our new collaboration agreement with Lam and the resulting expansion of our development of the Hyb & Seq product candidate. As an offset to this expected increase in expense relating to Hyb & Seq, Lam has committed to provide up to $50.0 million in funding. We expect the majority of the Hyb and Seq program development efforts and related costs to be incurred during 2018 and the first half of 2019.

Selling, General and Administrative Expense

	Year Ended December 31,		Change	
	2017	2016	Dollars	Percentage
	(Dollars in thousands)			
Selling, general and administrative expense	$74,334	$62,700	$11,634	19%

The increase in selling, general and administrative expense in 2017 was primarily attributable to an increase in staffing and personnel-related costs of $8.8 million to support our sales, marketing and administrative functions, increased sales and marketing costs of $1.6 million related to promotional events and other external activities, and increased professional fees of $0.6 million. These increases were partially offset by $0.6 million of lower state and local gross receipt-based taxes primarily as a result of lower amounts received under our collaboration agreements. We expect selling, general and administrative expenses may increase in future periods, in the event we make additional investments to support the sales of our existing products, or launch activities relating to new product candidates, such as our GeoMx DSP product candidate, for which material commercial launch activities are expected to commence in 2019.

Other Income (Expense)

	Year Ended December 31,		Change	
	2017	2016	Dollars	Percentage
	(Dollars in thousands)			
Interest income	$809	$390	$419	107%
Interest expense	(6,153)	(5,672)	(481)	8%

Other income (expense), net	183	(515)	698	(136)%
Total other income (expense), net	$(5,161)	$(5,797)	$636	(11)%

Interest expense increased in 2017, due primarily to increases in our long-term debt borrowings during these periods. The average balance of long-term debt outstanding during 2017 and 2016 was $48.6 million and $44.9 million, respectively. Interest income increased in 2017, due to higher interest rates as well as an increased average investment balance in 2017.

Other income (expense), net is primarily related to realized and unrealized gains or losses associated with foreign currency transactions during 2017, in which we benefited from the weakening of the U.S. dollar versus foreign currencies, primarily the Euro and the British pound.

Liquidity and Capital Resources

As of December 31, 2018, we had cash, cash equivalents and short-term investments of $94.0 million, compared to $77.6 million as of December 31, 2017. We believe our existing cash, cash equivalents and short-term investments will be sufficient to meet our working capital and capital expenditure needs for at least the next 12 months. However, we may need to raise additional capital to expand the commercialization of our products, fund our operations and further our research and development activities. Our future funding requirements will depend on many factors, including: the nature and timing of any additional companion diagnostic development collaborations we may establish; market acceptance and the level of sales of our existing products and new product candidates; the nature and timing of any additional research, product development or other partnerships or collaborations we may establish; the cost and timing of establishing additional sales, marketing and distribution capabilities; the cost of our research and development activities; the cost and timing of regulatory clearances or approvals; the effect of competing technological and market developments; and the extent to which we acquire or invest in businesses, products and technologies, although we currently have no commitments or agreements relating to any of these types of transactions. We will require additional funds in the future and we may not be able to obtain such funds on acceptable terms, or at all. If we raise additional funds by issuing equity or equity-linked securities, our stockholders may experience dilution. Debt financing, if available, may involve covenants restricting our operations or our ability to incur additional debt. Any debt or additional equity financing that we raise may contain terms that are not favorable to us or our stockholders. If we raise additional funds through partnership, collaboration or licensing arrangements with third parties, it may be necessary to relinquish some rights to our technologies or our products, or grant licenses on terms that are not favorable to us. If we are unable to raise adequate funds, we may have to liquidate some or all of our assets, delay or reduce the scope of or eliminate some or all of our research and development programs, delay development, launch activities or commercialization of our products or license to third parties the rights to commercialize products or technologies that we would otherwise seek to commercialize, or reduce marketing, customer support or other resources devoted to our products or cease operations.

Sources of Funds

Since inception, we have financed our operations primarily through the sale of equity securities and, to a lesser extent, from borrowings. Our cash used in operations for the year ended December 31, 2018 was $54.1 million, including $23.6 million in cash receipts from our collaboration agreements. The timing and amount of such receipts in the future are uncertain, and therefore we may be required to secure larger amounts of cash to fund our planned operations.

Equity Financings

In July 2018, we completed an underwritten public offering of 4,600,000 shares of common stock, including the exercise in full by the underwriters of their option to purchase 600,000 additional shares of common stock in August 2018, for total gross proceeds of $57.5 million. After underwriter’s commissions and other expenses of the offering, our aggregate net proceeds were approximately $53.8 million.

In January 2018, we entered into a sales agreement with a sales agent to sell shares of our common stock through an “at the market” equity offering program for up to $40.0 million in gross cash proceeds. The sales agreement allows us to set the parameters for the sale of shares, including the number of shares to be issued, the time period during which sales are requested to be made, limits on the number of shares that may be sold in any one trading day and a minimum price below which sales may not be made. Under the terms of the Sales Agreement, commission expenses to the sales agent will be 3% of the gross sales price per share sold through the sales agent. The Sales Agreement shall automatically terminate upon the issuance and sale of placement shares equaling sales proceeds of $40.0 million and may be terminated earlier by either us, or the sales agent upon five days’ notice. As of the date of this report, there had been no shares of common stock sold under this agreement.

In June 2017, we completed an underwritten public offering of 3,450,000 shares of common stock, including the exercise by the underwriter of an over-allotment option for 450,000 shares of common stock, for total gross proceeds of $57.8 million. After underwriters’ fees and commissions and other expenses of the offering, our aggregate net proceeds were approximately $56.5 million.

Debt Instruments

Term Loan Agreements

In April 2014, we entered into a term loan agreement, or the 2014 Term Loan, under which we could borrow up to $45.0 million. In October 2015, we amended the 2014 Term Loan primarily to increase the maximum borrowing capacity to $60.0 million, excluding deferred interest, reduce the applicable interest rate from 12.5% to 12.0%, extend the interest-only period through March 2021, and extend the final maturity to March 2022. Under the 2014 Term Loan, borrowings accrued interest at 12.0% annually, payable quarterly, of which 3.0% could be deferred during the first six years of the amended term at our option and paid together with the principal at maturity. We borrowed a total of $45.0 million under the 2014 Term Loan through June 2016, excluding deferred interest. On December 31, 2016, our option to borrow the remaining $15.0 million under the 2014 Term Loan expired. Total borrowings and deferred interest under the 2014 Term Loan were $49.3 million as of December 31, 2017.

In October 2018, we entered into an amended and restated term loan agreement, or the 2018 Term Loan, under which we may borrow up to $100.0 million, which is due and payable in September 2024. At closing, we received net proceeds of approximately $7.8 million, pursuant to borrowings of $60.0 million under the new facility, net of repayment of our 2014 Term Loan of $50.4 million, including deferred interest and transaction-related fees and expenses. Of the $40.0 million in additional borrowing capacity under the 2018 Term Loan, we have the option to borrow up to $20.0 million until June 2019 subject to no further terms and conditions, and up to an additional $20.0 million until March 2020, subject to the achievement of annual revenue thresholds as at or prior to December 31, 2019.

The 2018 Term Loan accrues interest at a rate of 10.5%, payable quarterly, of which 3.0% may be deferred during the six year term at our option and repaid at maturity together with the principal. We paid an upfront fee of 0.5% of the aggregate principal amount of the initial borrowing under the 2018 Term Loan, and will pay a facility fee equal to 2.0% of the total amount borrowed including any deferred interest at the time the principal is repaid. A long-term liability of $1.4 million is being accreted using the effective interest method for the facility fee over the term of the 2018 Term Loan. Additional borrowings under the 2018 Term Loan will bear the same upfront and facility fees.

In connection with 2018 Term Loan, warrants to purchase an aggregate of 341,578 shares of common stock with an exercise price per share of $21.12 were issued to the lenders, and, in the event additional amounts are drawn under the 2018 Term Loan, additional warrants will be issued on each subsequent draw date for 0.3% of the fully-diluted shares then outstanding. The exercise price for additional warrants will be set at a 25.0% premium to the average closing trading price for the 30-day trading period as of the date immediately before the applicable draw date. The warrants issued in conjunction with the initial borrowing under the 2018 Term Loan were determined to be closely linked to our common stock, and as such, were recorded as an equity security in additional paid in capital at their relative fair value of $1.6 million with a corresponding debt discount recorded against 2018 Term Loan balance outstanding.

Total borrowings and deferred interest under the 2018 Term Loan were $60.4 million as of December 31, 2018. The balance of the 2018 Term Loan as of December 31, 2018 is net of discounts related to the warrants, debt issuance costs and other upfront fees of $2.0 million.

We have the option to prepay the 2018 Term Loan, in whole or part, at any time subject to payment of a redemption fee of up to 4.0%, which declines 1.0% after the first year of the term, with no redemption fee payable if prepayment occurs after the second year of the loan.

Obligations under the 2018 Term Loan are collateralized by substantially all of our assets. The 2018 Term Loan contains customary conditions to borrowings, events of default and negative covenants, including covenants that could limit our ability to, among other things, incur additional indebtedness, liens or other encumbrances, make dividends or other distributions; buy, sell or transfer assets; engage in any new line of business; and enter into certain transactions with affiliates. The 2018 Term Loan also includes a $2.0 million minimum liquidity covenant and annual minimum revenue-based financial covenants. If our actual revenues are below the minimum annual revenue requirement for any given year, we may avoid a related default by generating proceeds from an equity or subordinated debt issuance equal to the shortfall between our actual revenues and the minimum revenue requirement.

2018 Revolving Loan Facility

In January 2018, we entered into a $15.0 million secured revolving loan facility, with availability subject to a borrowing base consisting of eligible accounts receivable. In November 2018, we entered into an amended and

restated loan and security agreement to increase the borrowing capacity under the facility to $20.0 million, amend the borrowing base to include finished goods inventory, and extend the final maturity under the facility to November 2021. As of December 31, 2018, no amounts had been drawn on the facility.

Interest on borrowings is payable monthly and accrues at a yearly rate equal to the greater of the prime rate as reported in the Wall Street Journal plus 0.50%, or 4.75%. During an event of default, amounts drawn accrue interest at a yearly rate equal to 8.75%. Obligations under the agreement are secured by our cash and cash equivalents, accounts receivable and proceeds thereof, and inventory and proceeds from the sale thereof. The lender's interest in the collateral under the loan facility is senior to the lender's interest in such collateral under the term loan agreement. The loan facility contains various customary representations and warranties, conditions to borrowing, events of default, including cross default provisions with respect to the loan facility, and covenants, including financial covenants requiring the maintenance of minimum annual revenue and liquidity.

We were in compliance with our financial covenants under the 2018 Term Loan agreement and the secured revolving loan facility as of December 31, 2018.

Use of Funds

Our principal uses of cash are funding our operations, capital expenditures, working capital requirements and satisfaction of any outstanding obligations under our revolving or term loan facilities, respectively. Over the past several years, our revenue has increased significantly from year to year and, as a result, our cash flows from customer collections have increased. However, our operating expenses have also increased as we have invested in our sales and marketing activities and growing our existing product sales, in research and development of new product platforms and technologies that we believe have the potential to drive the long-term growth of our business, and in support of our various collaborations.

Our operating cash requirements may increase in the future as we invest in the research and development of new product platforms including GeoMx DSP and Hyb & Seq, increase sales and marketing activities to expand the installed base of our nCounter Analysis Systems and continue to promote consumable usage, including Prosigna, and develop new applications, chemistry and instruments for our nCounter platform. We cannot be certain our revenues will grow sufficiently to offset our operating expense increases, nor can we be certain that we will be successful in continuing to generate cash from new partnerships or collaborations to help fund our operations. As a result, we may need to raise additional funds to support our operations, and such funding may not be available to us on acceptable terms, or at all. If we are unable to raise additional funds when needed, our operations and ability to execute our business strategy could be adversely affected.

Historical Cash Flow Trends

The following table shows a summary of our cash flows for the periods indicated:

	Year Ended December 31,		
	2018	2017	2016
	(In thousands)		
Cash used in operating activities	$(54,065)	$(51,657)	$(6,079)
Cash used in investing activities	(22,925)	(2,490)	(30,261)
Cash provided by financing activities	75,081	59,668	35,093

Operating Cash Flows

We derive operating cash flows from cash collected from the sale of our products and services and from collaborations. These cash flows received are currently outweighed by our use of cash for operating expenses to support the growth of our business. As a result, we have historically experienced negative cash flows from operating activities and this will likely continue for the foreseeable future.

Net cash used in operating activities for 2018 consisted of our net loss of $77.4 million partially offset by $8.9 million of changes in our operating assets and liabilities and $14.4 million of net non-cash income and expense items, such as stock-based compensation, depreciation and amortization, deferred interest converted to principal pursuant to our term loan agreement, and provisions for bad debt and inventory obsolescence.

Net cash used in operating activities for 2017 consisted of our net loss of $43.6 million, plus the negative impact of decreases in our deferred revenue related to collaboration agreements of $29.2 million. The decrease in deferred revenue related to collaborations was due primarily to the termination of our Medivation and Astellas collaboration agreement and the change in scope of the Merck collaboration agreement, both of which resulted in the completion percentage used in the proportional performance model used for revenue recognition to increase substantially. As a result, we accelerated the recognition of revenue recognized during 2017, relative to the original planned project time

lines and estimated costs. These unfavorable “uses” of funds were partially offset by $3.3 million of changes in our operating assets and liabilities and $17.8 million of net non-cash income and expense items, such as stock-based compensation, depreciation and amortization, deferred interest converted to principal pursuant to our term loan agreement, and provisions for bad debt and inventory obsolescence.

Net cash used in operating activities for 2016 consisted of our net loss of $47.1 million partially offset by $27.5 million of changes in our operating assets and liabilities, including $29.9 million related to our collaboration agreements, and by $13.5 million of net non-cash income and expense items, such as stock-based compensation, depreciation and amortization, deferred interest converted to principal for the term loan, and accretion of discount on short-term investments.

Investing Cash Flows

Our most significant investing activities for the years ended December 31, 2018, 2017, and 2016 were related to the purchase and sale of short-term investments. Because we manage our cash usage with respect to our total cash, cash equivalents and short-term investments, we do not consider these cash flows to be important to an understanding of our liquidity and capital resources.

In the years ended December 31, 2018, 2017, and 2016, we purchased $4.5 million, $4.3 million, and $4.0 million respectively, of property and equipment required to support the growth and expansion of our operations.

Financing Cash Flows

Historically, we have funded our operations through the issuance of equity securities and debt borrowings.

Net cash provided by financing activities for 2018 consisted of net proceeds of $53.8 million from an underwritten public offering, $13.5 million of net proceeds from our 2018 Term Loan, $3.5 million of proceeds from the exercise of stock options, and $1.5 million from proceeds associated with our Employee Stock Purchase Plan.

Net cash provided by financing activities for 2017 consisted of net proceeds of $56.5 million from an underwritten public offering, $1.8 million from proceeds associated with our Employee Stock Purchase Plan, and $1.1 million of proceeds from the exercise of stock options.

Net cash provided by financing activities for 2016 consisted of net proceeds of $26.2 million from the sale of shares through an “at the market” equity offering program, proceeds of $5.0 million from our amended term loan agreement, $1.5 million from proceeds associated with our Employee Stock Purchase Plan, and $2.6 million of proceeds from the exercise of stock options.

Contractual Obligations

The following table reflects a summary of our contractual obligations as of December 31, 2018.

	Payments due by period				
Contractual Obligations[1]	Total	Less than 1 Year	1-3 Years	3-5 Years	More than 5 Years
	(In thousands)				
Lease obligations[2]	$41,714	$ 5,526	$ 11,153	$ 11,577	$ 13,458
Long-term debt obligations[3]	60,400	—	—	—	60,400
Purchase obligations[4]	17,698	17,698	—	—	—
Total	$119,812	$ 23,224	$ 11,153	$ 11,577	$ 73,858

[1]Excludes royalty obligations based on net sales of products, including royalties payable to the Institute for Systems Biology, as any such amounts are not currently determinable.

[2]Lease costs are primarily for office, laboratory and manufacturing space.

[3]Includes principal and deferred interest on long-term debt obligations.

[4]Purchase obligations consist of contractual and legally binding commitments under outstanding purchase orders to purchase long lead time inventory and other research and development items.

Critical Accounting Policies and Significant Estimates

Our discussion and analysis of our financial condition and results of operations are based upon our financial statements which have been prepared in accordance with U.S. generally accepted accounting principles, or GAAP. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets and liabilities and related disclosure of contingent assets and liabilities, revenue and expenses at the date of the financial statements. Generally, we base our estimates on historical experience and on various other assumptions in accordance with GAAP that we believe to be reasonable under the circumstances. Actual results may differ from these estimates.

Critical accounting policies and estimates are those that we consider the most important to the portrayal of our financial condition and results of operations because they require our most difficult, subjective or complex judgments, often as a result of the need to make estimates about the effect of matters that are inherently uncertain. Our critical accounting policies and estimates include those related to:

- revenue recognition;
- stock-based compensation;
- inventory valuation;
- fair value measurements; and
- income taxes.

Revenue Recognition

We generate the majority of our revenue from sales of products and services. Our products consist of our proprietary nCounter Analysis Systems and related consumables. Services consist of instrument service contracts and service fees for assay processing.

Revenue is recognized when control of the promised goods or services is transferred to our customers, in an amount that reflects the consideration expected to be received in exchange for those products and services. This process involves identifying the contract with a customer, determining the performance obligations in the contract, determining the contract price, allocating the contract price to the distinct performance obligations in the contract, and recognizing revenue when the performance obligations have been satisfied. A performance obligation is considered distinct from other obligations in a contract when it provides a benefit to the customer either on its own or together with other resources that are readily available to the customer and is separately identified in the contract. Performance obligations are considered satisfied once control of a product or service has transferred to the customer, meaning the customer has the ability to use and obtain the benefit of the product or service. Revenue is recognized for satisfied performance obligations only when there are no uncertainties regarding payment terms or transfer of control.

Revenue from instruments, consumables and in vitro diagnostic kits is recognized generally upon shipment to the end customer, which is when title of the product has been transferred to the customer. Instrument revenue related to installation and calibration services is recognized when the customer has possession of the instrument and the services have been performed. Such services can also be provided by our distribution partners and other third parties. For instruments sold solely to run Prosigna assays, an initial training course must be provided by us prior to instrument revenue recognition.

Instrument service contracts are sold with contract terms ranging from 12-36 months and cover periods after the end of the initial 12-month warranty. These contracts include services to maintain performance within our designed specifications and a minimum of one preventative maintenance service procedure during the contract term. Revenue from services to maintain designed specifications is considered a stand-ready obligation and recognized evenly over the contract term and service revenue related to preventative maintenance of instruments is recognized when the procedure is completed. Revenue from service fees for assay processing is recognized upon the rendering of the related performance obligation.

For arrangements with multiple performance obligations, we allocate the contract price in proportion to its stand-alone selling price. We use our best estimate of stand-alone selling price for its products and services based on average selling prices over a 12-month period and reviews its stand-alone prices annually.

Product and service revenues from sales to customers through distributors are recognized consistent with the policies and practices for direct sales to customers, as described above.

We enter into collaboration agreements that may generate upfront fees, and in some cases subsequent milestone payments that may be earned upon completion of certain product development milestones or other designated activities. We are able to estimate the total expected cost of product development and other services under these arrangements and recognize collaboration revenue using a contingency-adjusted proportional performance model. Costs incurred to date compared to total expected costs are used to determine proportional performance, as this is considered to be representative of the delivery of outputs under the arrangements. Revenue recognized at any point in time is limited to cash received, amounts contractually due, or the amounts of any product development or other contractual milestone payments when achievement of a milestone is deemed to be probable. Changes in estimates of total expected collaboration product development or other costs are accounted for prospectively as a change in

estimate. From period to period, collaboration revenue can fluctuate substantially based on the achievement or probable achievement of product development or other milestones, or as estimates of total expected collaboration product development or other costs are changed or updated. We may recognize revenue from collaboration agreements that do not include upfront or milestone-based payments. Amounts due to collaboration partners are recognized when the related activities have occurred and are classified in the statement of operations, generally as research and development expense, based on the nature of the related activities.

Stock-based Compensation

We account for stock-based compensation at fair value. Stock-based compensation costs are recognized based on their grant date fair value estimated using the Black-Scholes option pricing model. Stock-based compensation expense recognized in the consolidated statements of operations is based on options ultimately expected to vest and has been reduced by an estimated forfeiture rate based on our historical and expected forfeiture patterns. We use the straight-line method of allocating compensation cost over the requisite service period of the related award.

Determining the fair value of stock-based awards at the grant date under the Black-Scholes option pricing model requires judgment, including estimating the value per share of our common stock, risk-free interest rate, expected term and dividend yield and volatility. The assumptions used in calculating the fair value of stock-based awards represent our best estimates based on management judgment and subjective future expectations. These estimates involve inherent uncertainties. If any of the assumptions used in the Black-Scholes option pricing model significantly change, stock-based compensation for future awards may differ materially from the awards granted previously.

The expected term of options granted is based on historical experience of similar awards and expectations of future employee behavior. The risk-free interest rate for the expected term of the option is based on the U.S. Treasury yield curve in effect at the time of grant. We have not paid and do not anticipate paying cash dividends on our common stock; therefore, the expected dividend yield is assumed to be zero. Volatility through 2016 was based on the estimated volatility of similar companies whose share prices are publicly available. In 2017, we calculated volatility based on our share price activity throughout the year.

Inventory Valuation

Inventory consists of raw materials, certain component parts to be used in manufacturing our products and finished goods. Inventory is stated at the lower of cost or market. Cost is determined using a standard cost system, whereby the standard costs are updated periodically to reflect current costs and market represents the lower of replacement cost or estimated net realizable value. We record adjustments to inventory for potentially excess, obsolete, slow-moving or impaired items. The business environment in which we operate is subject to rapid changes in technology and customer demand. We regularly review inventory for excess and obsolete products and components, taking into account product life cycle and development plans, product expiration and quality issues, historical experience and our current inventory levels. If actual market conditions are less favorable than anticipated, additional inventory adjustments could be required.

Recent Accounting Pronouncements

For information regarding recent accounting pronouncements, see Note 2 of the Notes to the Consolidated Financial Statements under Item 8 of this report.

Off-Balance Sheet Arrangements

We do not have any relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities, which would have been established for the purpose of facilitating off-balance sheet arrangements or for any other contractually narrow or limited purpose.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to various market risks, including changes in commodity prices and interest rates. Market risk is the potential loss arising from adverse changes in market rates and prices. Prices for our products are largely denominated in U.S. dollars and, as a result, we do not face significant risk with respect to foreign currency exchange rates.

Interest Rate Risk

Generally, our exposure to market risk has been primarily limited to interest income sensitivity, which is affected by changes in the general level of U.S. interest rates, particularly because the majority of our investments are in short-term debt securities. The primary objective of our investment activities is to preserve principal while at the same time maximizing the income we receive without significantly increasing risk. To minimize risk, we maintain our portfolio of cash, cash equivalents and short-term investments in a variety of interest-bearing instruments, which have included U.S. government and agency securities, high-grade U.S. corporate bonds, asset-backed securities, and money market funds. Declines in interest rates, however, would reduce future investment income. A 10% decline in interest rates, occurring on January 1, 2019 and sustained throughout the period ending December 31, 2019, would not be material.

As of December 31, 2018, the principal and deferred interest outstanding under our term borrowings was $60.4 million. The interest rates on our term borrowings under our credit facility are fixed. If overall interest rates had increased by 10% during the periods presented, our interest expense would not have been affected.

Foreign Currency Exchange Risk

As we continue to expand internationally our results of operations and cash flows will become increasingly subject to fluctuations due to changes in foreign currency exchange rates. Historically, a majority of our revenue has been denominated in U.S. dollars, although we sell our products and services directly in certain markets outside of the United States denominated in local currency, principally the Euro. Our expenses are generally denominated in the currencies in which our operations are located, which is primarily in the United States. The effect of a 10% adverse change in exchange rates on foreign denominated cash, receivables and payables would not have been material for the periods presented. As our operations in countries outside of the United States grow, our results of operations and cash flows will be subject to potentially greater fluctuations due to changes in foreign currency exchange rates, which could harm our business in the future. To date, we have not entered into any material foreign currency hedging contracts although we may do so in the future.

Inflation Risk

We do not believe that inflation has had a material effect on our business, financial condition or results of operations. If our costs were to become subject to significant inflationary pressures, we may not be able to fully offset such higher costs through price increases. Our inability or failure to do so could adversely affect our business, financial condition and results of operations.

Item 8. Financial Statements and Supplementary Data

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS
NANOSTRING TECHNOLOGIES, INC.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of NanoString Technologies, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of NanoString Technologies, Inc. and its subsidiaries (the "Company") as of December 31, 2018 and 2017, and the related consolidated statements of operations, of comprehensive loss, of changes in stockholders' equity and of cash flows for each of the three years in the period ended December 31, 2018, including the related notes ("collectively referred to as the consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company did not maintain, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control – Integrated Framework (2013) issued by the COSO because material weaknesses in internal control over financial reporting existed as of that date related to: (i) an ineffective control environment as the Company had an insufficient complement of resources with an appropriate level of information technology ("IT") controls knowledge, expertise and training commensurate with the Company's financial reporting requirements which contributed to additional material weaknesses in that the Company (ii) did not design and maintain effective controls over certain IT general controls for the significant applications used in the preparation of the financial statements, and (iii) did not design and maintain controls to timely detect and independently review instances where individuals with access to post a journal entry may also have edited or created the journal entry.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the annual or interim financial statements will not be prevented or detected on a timely basis. The material weaknesses referred to above are described in Management's Annual Report on Internal Control Over Financial Reporting appearing under Item 9A. We considered these material weaknesses in determining the nature, timing, and extent of audit tests applied in our audit of the 2018 consolidated financial statements, and our opinion regarding the effectiveness of the Company's internal control over financial reporting does not affect our opinion on those consolidated financial statements.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting included in management's report referred to above. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included

performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) 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/ PricewaterhouseCoopers LLP
Seattle, Washington
March 11, 2019

We have served as the Company's auditor since 2008.

NanoString Technologies, Inc.
Consolidated Balance Sheets

	December 31,	
	2018	2017
	(In thousands, except par value amounts)	
Assets		
Current assets:		
Cash and cash equivalents	$ 24,356	$ 26,136
Short-term investments	69,641	51,419
Accounts receivable, net	17,279	19,564
Inventory, net	13,173	20,057
Prepaid expenses and other current assets	7,258	4,745
Total current assets	131,707	121,921
Restricted cash	—	143
Property and equipment, net	15,171	14,057
Other assets	680	641
Total assets	$ 147,558	$ 136,762
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 8,636	$ 4,092
Accrued liabilities	3,705	4,507
Accrued compensation and other employee benefits	12,060	8,634
Customer deposits	8,167	8,945
Deferred revenue, current portion	9,890	9,229
Deferred rent, current portion	657	512
Total current liabilities	43,115	35,919
Deferred revenue, net of current portion	1,620	3,304
Deferred rent and other liabilities, net of current portion	7,558	8,499
Long-term debt, net of discounts	58,396	48,931
Total liabilities	110,689	96,653
Commitments and contingencies (Note 14)		
Stockholders' equity		
Preferred stock, $0.0001 par value, 15,000 shares authorized; none issued	—	—
Common stock, $0.0001 par value, 150,000 shares authorized; 30,913 and 25,421 shares issued and outstanding at December 31, 2018 and 2017, respectively	3	2
Additional paid-in-capital	428,162	353,308
Other comprehensive loss	(40)	(99)
Accumulated deficit	(391,256)	(313,102)
Total stockholders' equity	36,869	40,109
Total liabilities and stockholders' equity	$ 147,558	$ 136,762

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

NanoString Technologies, Inc.
Consolidated Statements of Operations

	Years Ended December 31,		
	2018	2017	2016
	(In thousands, except per share amounts)		
Revenue:			
Product and service	$ 83,523	$ 72,010	$ 69,134
Collaboration	23,209	42,895	17,355
Total revenue	106,732	114,905	86,489
Costs and expenses:			
Cost of product and service revenue	36,331	31,880	30,245
Research and development	61,599	46,888	34,720
Selling, general and administrative	78,195	74,334	62,700
Total costs and expenses	176,125	153,102	127,665
Loss from operations	(69,393)	(38,197)	(41,176)
Other income (expense):			
Interest income	1,331	809	390
Interest expense	(7,431)	(6,153)	(5,672)
Other income (expense)	(1,658)	183	(515)
Total other income (expense)	(7,758)	(5,161)	(5,797)
Net loss before provision for income taxes	(77,151)	(43,358)	(46,973)
Provision for income taxes	(249)	(204)	(116)
Net loss	$ (77,400)	$ (43,562)	$ (47,089)
Net loss per share—basic and diluted	$ (2.78)	$ (1.84)	$ (2.34)
Weighted average shares used in computing basic and diluted net loss per share	27,883	23,731	20,116

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

NanoString Technologies, Inc.
Consolidated Statements of Comprehensive Loss

	Years Ended December 31,		
	2018	2017	2016
	(In thousands)		
Net loss	$(77,400)	$(43,562)	$(47,089)
Other comprehensive income (loss):			
Change in unrealized gain (loss) on short-term investments	59	(42)	(28)
Comprehensive loss	$(77,341)	$(43,604)	$(47,117)

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

NanoString Technologies, Inc.
Consolidated Statements of Changes in Stockholders' Equity

	Common Stock Shares	Amount	Additional Paid-in Capital	Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	(In thousands)					
Balances at January 1, 2016	19,570	$ 2	$ 242,693	$ (29)	(222,451)	$ 20,215
Issuance of common stock net of issuance costs of $1.0 million	1,333	—	26,073	—	—	26,073
Issuance of common stock for employee stock purchase plan	139	—	1,489	—	—	1,489
Exercise of stock options	349	—	2,607	—	—	2,607
Exercise of common stock warrants, net	133	—	—	—	—	—
Vesting of restricted stock units	5	—	—	—	—	—
Stock-based compensation	—	—	9,038	—	—	9,038
Net loss	—	—	—	—	(47,089)	(47,089)
Other comprehensive (income) loss	—	—	—	(28)	—	(28)
Balances at December 31, 2016	21,529	2	281,900	(57)	(269,540)	12,305
Issuance of common stock net of issuance costs of $1.3 million	3,450	—	56,486	—	—	56,486
Issuance of common stock for employee stock purchase plan	139	—	1,793	—	—	1,793
Issuance of common stock warrants	—	—	674	—	—	674
Exercise of stock options	228	—	1,086	—	—	1,086
Exercise of common stock warrants, net	29	—	—	—	—	—
Vesting of restricted stock units, net	46	—	—	—	—	—
Stock-based compensation	—	—	11,369	—	—	11,369
Net loss	—	—	—	—	(43,562)	(43,562)
Other comprehensive (income) loss	—	—	—	(42)	—	(42)
Balances at December 31, 2017	25,421	2	353,308	(99)	(313,102)	40,109
Cumulative effect of a change in accounting policy[1]	—	—	—	—	(754)	(754)
Issuance of common stock net of issuance costs of $3.7 million	4,600	1	53,828	—	—	53,829
Issuance of common stock warrants	—	—	4,593	—	—	4,593
Exercise of stock options	431	—	3,507	—	—	3,507
Issuance of common stock for employee stock purchase plan	257	—	1,451	—	—	1,451
Exercise of common stock warrants, net	118	—	—	—	—	—
Vesting of restricted stock units, net	86	—	—	—	—	—
Stock-based compensation	—	—	11,475	—	—	11,475
Net loss	—	—	—	—	(77,400)	(77,400)
Other comprehensive (income) loss	—	—	—	59	—	59
Balances at December 31, 2018	30,913	$ 3	$ 428,162	$ (40)	$ (391,256)	$ 36,869

[1] Effective January 1, 2018, we adopted Accounting

Standard Update No. 2014-09, Revenue from Contracts with Customers. See Note 2. Significant Accounting Policies and Note 3. Revenue from Contracts with Customers for more information.

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

NanoString Technologies, Inc.
Consolidated Statements of Cash Flows

	Years Ended December 31,		
	2018	2017	2016
	(In thousands)		
Operating activities			
Net loss	$(77,400)	$(43,562)	$(47,089)
Adjustments to reconcile net loss to net cash used in operating activities			
Depreciation and amortization	4,070	3,354	2,977
Stock-based compensation expense	11,475	11,369	9,038
Repayment of accrued interest of long-term debt	(5,446)	—	—
Loss on extinguishment of long-term debt	842	—	—
Amortization (accretion) of discount or premium on short-term investments	278	198	(20)
Amortization of debt issuance costs and discounts	438	171	158
Conversion of accrued interest to long-term debt	1,530	1,472	1,357
(Gain) loss on disposal of property and equipment	97	15	(2)
Provision for bad debt	467	361	—
Provision for inventory obsolescence	691	866	822
Changes in operating assets and liabilities			
Accounts receivable	1,807	2,277	(2,476)
Inventory	5,251	(8,742)	(5,857)
Prepaid expenses and other assets	(2,714)	(1,278)	109
Accounts payable	4,640	(110)	869
Accrued liabilities	(494)	1,312	(40)
Accrued compensation and other employee benefits	3,463	295	281
Customer deposits	(778)	8,335	610
Deferred revenue	(1,779)	(29,161)	29,948
Deferred rent and other liabilities	(503)	1,171	3,236
Net cash used in operating activities	(54,065)	(51,657)	(6,079)
Investing activities			
Purchases of property and equipment	(4,485)	(4,284)	(3,991)
Proceeds from sale of property and equipment	—	—	4
Proceeds from sale of short-term investments	7,910	3,600	4,700
Proceeds from maturity of short-term investments	51,300	79,599	34,800
Purchases of short-term investments	(77,650)	(81,405)	(65,774)
Net cash used in investing activities	(22,925)	(2,490)	(30,261)
Financing activities			
Proceeds from long-term debt	60,000	—	5,000
Deferred costs related to long-term debt	(500)	—	—
Repayment of long-term debt and lease financing obligations	(45,000)	(58)	(226)
Fees paid upon extinguishment of debt	(1,009)	—	—
Proceeds from sale of common stock, net	53,829	56,486	26,223
Proceeds from issuance of common stock warrants	3,010	674	—
Proceeds from issuance of common stock for employee stock purchase plan	1,451	1,793	1,489
Tax withholdings related to net share settlements of restricted stock units	(207)	(313)	—
Proceeds from exercise of stock options	3,507	1,086	2,607
Net cash provided by financing activities	75,081	59,668	35,093
Net increase (decrease) in cash and cash equivalents	(1,909)	5,521	(1,247)
Effect of exchange rate changes on cash and cash equivalents	(14)	32	(26)

Cash and cash equivalents and restricted cash			
Beginning of year	26,279	20,726	21,999
End of year	$24,356	$26,279	$20,726

NanoString Technologies, Inc.
Consolidated Statements of Cash Flows (continued)

	Years Ended December 31,		
	2018	2017	2016
	(In thousands)		
Reconciliation of cash and cash equivalents and restricted cash at end of period:			
Cash and cash equivalents	$ 24,356	$ 26,136	$ 20,583
Restricted cash	—	143	143
Cash and cash equivalents and restricted cash at end of period	$ 24,356	$ 26,279	$ 20,726
Supplemental disclosures			
Cash paid for interest	$ 6,213	$ 4,416	$ 4,071
Fair value of warrants issued with long-term debt	1,583	—	—
Cash paid for taxes	231	154	217
Purchases of property and equipment, accrued but not paid	—	—	275
Rental instruments reclassified from inventory	585	1,023	801
Non-cash inventory exchanged for services	106	—	28

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

NanoString Technologies, Inc.
Notes to Consolidated Financial Statements
1. Description of the Business
NanoString Technologies, Inc. (the "Company") was incorporated in the state of Delaware on June 20, 2003. The Company's headquarters is located in Seattle, Washington. The Company's proprietary optical barcoding chemistry enables direct detection, identification and quantification of individual target molecules in a biological sample by attaching a unique color coded fluorescent reporter to each target molecule of interest. The Company markets its proprietary nCounter Analysis System, consisting of instruments and consumables, including its Prosigna Breast Cancer Assay, to academic, government, biopharmaceutical and clinical laboratory customers.
The Company has incurred losses to date and expects to incur additional losses for the foreseeable future. The Company continues to invest the majority of its resources in the development and growth of its business, including significant investments in new product development and sales and marketing efforts. The Company's activities have been financed primarily through the sale of equity securities and incurrence of indebtedness, cash received by the Company pursuant to certain product development collaborations, and, to a lesser extent, through the incurrence of capital leases and other borrowings.
2. Significant Accounting Policies
Accounting Principles and Principles of Consolidation
The consolidated financial statements and accompanying notes were prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP"). The accompanying consolidated financial statements reflect the accounts of the Company and its wholly-owned subsidiaries. Each of the subsidiaries operates as a sales and support office. The functional currency of each subsidiary is the U.S. dollar. All significant intercompany balances and transactions have been eliminated.
Use of Estimates
The preparation of consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and that affect the reported amounts of revenue and expenditures during the reporting period. Actual results could differ from those estimates. Significant estimates inherent in the preparation of the accompanying consolidated financial statements include the estimation of the valuation of inventory, the fair value of the Company's equity securities, the calculation of stock-based compensation and the estimated future cost of ongoing collaboration agreements, for which revenues are recognized on a proportional performance basis.
Cash and Cash Equivalents
The Company considers all highly-liquid investments with purchased maturities of three months or less to be cash equivalents. The Company's cash equivalents consist principally of funds maintained in depository accounts. The Company invests its cash and cash equivalents with major financial institutions; at times these investments exceed federally insured limits.
Investments
The Company classifies its securities as available-for-sale, which are reported at estimated fair value with unrealized gains and losses included in accumulated other comprehensive loss in stockholders' equity. Realized gains, realized losses and declines in the value of securities judged to be other-than-temporary, are included in other income (expense). The cost of investments for purposes of computing realized and unrealized gains and losses is based on the specific identification method. Amortization of premiums and accretion of discounts are included in other income (expense). Interest and dividends earned on all securities are included in other income (expense). Investments in securities with maturities of less than one year, or where management's intent is to use the investments to fund current operations, or to make them available for current operations, are classified as short-term investments.
If the estimated fair value of a security is below its carrying value, the Company evaluates whether it is more likely than not that it will sell the security before its anticipated recovery in market value and whether evidence indicating that the cost of the investment is recoverable within a reasonable period of time outweighs evidence to the contrary. The Company also evaluates whether or not it intends to sell the investment. If the impairment is considered to be other-than-temporary, the security is written down to its estimated fair value. In addition, the Company considers

whether credit losses exist for any securities. A credit loss exists if the present value of cash flows expected to be collected is less than the amortized cost basis of

the security. Other-than-temporary declines in estimated fair value and credit losses are charged against other income (expense).

Accounts Receivable and Allowance for Doubtful Accounts

Accounts receivable are stated at the amount management expects to collect from customers based on their outstanding invoices. Management reviews accounts receivable regularly to determine if any receivable will potentially be uncollectible and to estimate the amount of allowance for doubtful accounts necessary to reduce accounts receivable to its estimated net realizable value by analyzing the status of significant past due receivables. The allowance for doubtful accounts was $0.7 million as of December 31, 2018, $0.5 million as of December 31, 2017, and $0.1 million as of December 31, 2016 and 2015. Additions to the allowance were $0.5 million, $0.4 million, and $0 for the years ended December 31, 2018, 2017, and 2016, respectively. There were write-offs of uncollectible accounts of approximately $0.2 million, $1,200, and $5,000 during the years ended December 31, 2018, 2017, and 2016 respectively.

Concentration of Credit Risks

Financial instruments that potentially expose the Company to concentrations of credit risk consist principally of cash and cash equivalents, short-term investments and accounts receivable. Cash is invested in accordance with the Company's investment policy, which includes guidelines intended to minimize and diversify credit risk. Most of the Company's investments are not federally insured. The Company has credit risk related to the collectability of its accounts receivable. The Company performs initial and ongoing evaluations of its customers' credit history or financial position and generally extends credit on account without collateral. The Company has not experienced any significant credit losses to date.

The Company had one customer/collaborator, Lam Research Corporation ("Lam"), that represented 17% of total revenue for the year ended December 31, 2018 and two customers/collaborators, (1) Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc. ("Merck"), and (2) Medivation, Inc. and Astellas Pharma Inc., that represented 25% and 10%, respectively, of total revenue for the year ended December 31, 2017. The Company had one customer/collaborator, Merck, that represented 13% of total revenue for the year 2016. The Company had no customers or collaborators that represented more than 10% of total accounts receivable as of December 31, 2018 and 2017.

The Company is also subject to supply chain risks related to the outsourcing of the manufacturing and production of its instruments to sole suppliers. Although there are a limited number of manufacturers for instruments of this type, the Company believes that other suppliers could provide similar products on comparable terms. Similarly, the Company sources certain raw materials used in the manufacture of consumables from certain sole suppliers. A change in suppliers, however, could cause a delay in manufacturing and a possible loss of sales, which would adversely affect operating results.

Fair value of financial instruments

The recorded amounts of certain financial instruments, including cash and cash equivalents, accounts receivable, prepaid expenses and other assets, accounts payable and accrued liabilities approximate fair value due to their relatively short maturities. Investments that are classified as available-for-sale are recorded at fair value. The fair value for securities held is determined using quoted market prices, broker or dealer quotations, or alternative pricing sources with reasonable levels of price transparency. The recorded amount of the Company's long-term debt approximates fair value because the related interest rates approximate rates currently available to the Company.

Inventory

Inventory consists of finished goods, work in process, raw materials and certain component parts to be used in manufacturing or servicing the Company's products. Inventory is stated at the lower of cost or net realizable value. Cost is determined using a standard cost system, whereby the standard costs are updated periodically to reflect current costs and market represents the lower of cost or market (replacement cost or estimated net realizable value). The Company's policy is to establish inventory reserves when conditions exist that suggest that inventory may be in excess of anticipated demand, obsolete, slow moving or impaired. In the event that the Company identifies these conditions exist in its inventory, its carrying value is reduced to its net realizable value. Inventory reserves were $3.2 million as of December 31, 2018, $2.7 million as of December 31, 2017, and $2.2 million as of December 31, 2016. Additions to the reserves were $0.7 million, $0.9 million, and $0.8 million for the years ended December 31, 2018, 2017, and 2016,

respectively. Write-offs of inventory reserves for the years ended December 31, 2018, 2017, and 2016 were $0.3 million, $0.4 million, and $0.7 million, respectively.

The Company outsources the manufacturing of its instruments to third-party contract manufacturers who manufacture them to certain specifications and source certain raw materials from sole source providers. Major delays in shipments, inferior quality, insufficient quantity or any combination of these or other factors may harm the Company's business and results of operations. In addition, the inability of one or more of these suppliers to provide the Company with an adequate supply of its

products or raw materials or the loss of one or more of these suppliers may cause a delay in the Company's ability to fulfill orders while it obtains a replacement supplier and may harm the Company's business and results of operations.

Property and Equipment

Property and equipment are recorded at cost, net of accumulated depreciation and amortization. Depreciation and amortization are computed using the straight-line method over the estimated useful lives of the assets. Manufacturing equipment is depreciated over five years, lease and loaner instruments are depreciated over one to five years, prototype systems are depreciated over two years, computer equipment is generally depreciated over three years, furniture and fixtures are depreciated over five years and leasehold improvements are amortized over the life of the related assets or the term of the lease, whichever is shorter. Expenditures for additions are capitalized and expenditures for maintenance and repairs are expensed as incurred. Gains and losses from the disposal of property and equipment are reflected in the consolidated statements of operations in the period of disposition.

Leases and Leasehold Improvements

Rent expense for leases that provide for scheduled rent increases during the lease term is recognized on a straight-line basis over the term of the related lease. Leasehold improvements that are funded by landlord incentives or allowances are recorded in property and equipment and as a component of deferred rent and are amortized as a reduction of rent expense over the term of the related lease.

Impairment of Long-Lived Assets

The Company recognizes impairment losses on long-lived assets when indicators of impairment are present and the anticipated undiscounted cash flows to be generated by those assets are less than the asset's carrying values. The Company has not experienced any impairment losses on its long-lived assets during the periods presented.

Segments

Operating segments are defined as components of an entity for which separate financial information is available and evaluated regularly by the chief operating decision maker in deciding how to allocate resources and in assessing performance. The Company's chief operating decision maker is the chief executive officer, who manages the operations and evaluates the financial performance on a total Company basis. The Company's principal operations and decision-making functions are located at its corporate headquarters in the United States and the Company operates as a single operating and reporting segment.

Revenue Recognition

The Company recognizes revenue when control of the promised goods or services is transferred to its customers, in an amount that reflects the consideration expected to be received in exchange for those products and services. This process involves identifying the contract with a customer, determining the performance obligations in the contract, determining the contract price, allocating the contract price to the distinct performance obligations in the contract, and recognizing revenue when the performance obligations have been satisfied. A performance obligation is considered distinct from other obligations in a contract when it provides a benefit to the customer either on its own or together with other resources that are readily available to the customer and is separately identified in the contract. Performance obligations are considered satisfied once the Company has transferred control of a product or service to the customer, meaning the customer has the ability to use and obtain the benefit of the product or service. The Company recognizes revenue for satisfied performance obligations only when there are no uncertainties regarding payment terms or transfer of control.

The Company generates the majority of its revenue from the sale of products and services. The Company's products consist of its proprietary nCounter Analysis Systems and related consumables. Services consist of instrument service contracts and service fees for assay processing. Revenues are presented net of the taxes that are collected from customers and remitted to governmental authorities.

Revenue from instruments, consumables and in vitro diagnostic kits is recognized generally upon shipment to the end customer, which is when title of the product has been transferred to the customer. Instrument revenue related to installation and calibration services is recognized when the customer has possession of the instrument and the services have been performed. Such services can also be provided by the Company's distribution partners and other third parties. For instruments sold solely to run Prosigna assays, an initial training course must be provided by the Company prior to instrument revenue recognition.

Instrument service contracts are sold with contract terms ranging from 12-36 months and cover periods after the end of the initial 12-month warranty. These contracts include services to maintain performance within the Company's designed specifications and a minimum of one preventative maintenance service procedure during the contract term. Revenue from

services to maintain designed specifications is considered a stand-ready obligation and recognized evenly over the contract term. Revenue from service fees for assay processing is recognized upon the rendering of the related performance obligation.

For arrangements with multiple performance obligations, the Company allocates the contract price in proportion to its stand-alone selling price. The Company uses its best estimate of stand-alone selling price for its products and services based on average selling prices over a 12-month period and reviews its stand-alone prices annually.

Product and service revenues from sales to customers through distributors are recognized consistent with the policies and practices for direct sales to customers, as described above.

The Company enters into collaboration agreements that may generate upfront fees, and in some cases subsequent milestone payments that may be earned upon completion of certain product development milestones or other designated activities. The Company estimates the expected total cost of product development and other services under these arrangements and recognizes collaboration revenue using a contingency-adjusted proportional performance model. Costs incurred to date compared to total expected costs are used to determine proportional performance, as this is considered to be representative of the delivery of outputs under the arrangements. Revenue recognized at any point in time is limited to cash received, amounts contractually due, or the amounts of any product development or other contractual milestone payments when achievement of a milestone is deemed to be probable. Changes in estimates of total expected collaboration product development or other costs are accounted for prospectively as a change in estimate. From period to period, collaboration revenue can fluctuate substantially based on the achievement or probable achievement of product development or other milestones, or as estimates of total expected collaboration product development or other costs are changed or updated. The Company may recognize revenue from collaboration agreements that do not include upfront or milestone-based payments. Amounts due to collaboration partners are recognized when the related activities have occurred and are classified in the statement of operations, generally as research and development expense, based on the nature of the related activities.

For the years ending December 31, 2017 and 2016, the Company recognized revenue related to its products and services based on the applicable accounting standards for revenue recognition which were in effect for those periods. The accounting standards in effect for years prior to 2018 allowed revenue to be recognized when (1) persuasive evidence of an arrangement existed, (2) delivery occurred or services had been rendered, (3) the price to the customer was fixed or determinable and (4) collectability was reasonably assured. A delivered product or service was considered to be a separate unit of accounting when it had value to the customer on a stand-alone basis. Products or services had value on a stand-alone basis if they were sold separately by any vendor or the customer could resell the delivered product.

Instruments, consumables and in vitro diagnostic kits were considered to be separate units of accounting as they were sold separately and revenue was recognized upon transfer of ownership, which was generally upon shipment. Instrument revenue related to installation and calibration services was recognized when services were rendered by the Company.

Service revenue is recognized when earned, which is generally upon the rendering of the related services. Service agreements and service fees for assay processing are each considered separate units of accounting as they are sold separately. Service agreements are generally separately priced. Revenue from service agreements is deferred and recognized on a straight-line basis over the service period.

For arrangements with multiple deliverables, the Company allocated the agreement consideration at the inception of the agreement to the deliverables based upon their relative selling prices. Selling prices were established by reference to vendor specific objective evidence based on stand-alone sales transactions for each deliverable. Vendor specific objective evidence was considered to have been established when a substantial majority of individual sales transactions within the previous 12-month period fall within a reasonably narrow range, which the Company defined to be plus or minus 15% of the median sales price of actual stand-alone sales transactions. The Company used its best estimate of selling price for individual deliverables when vendor specific objective evidence or third-party evidence was unavailable. Allocated revenue was only recognized for each deliverable when the revenue recognition criteria was met.

Cost of Revenue

Cost of revenue consists primarily of costs incurred in the production process, including costs of purchasing instruments from third-party contract manufacturers, consumable component materials and assembly labor and overhead, installation, warranty, service and packaging and delivery costs. In addition, cost of revenue includes royalty costs for licensed technologies included in the Company's products, provisions for slow-moving and obsolete inventory and stock-based compensation expense. Cost of revenue for instruments and consumables is recognized in the period the related revenue is recognized. Shipping and handling costs incurred for product shipments are included in cost of revenue in the consolidated statements of operations.

Reserve for Product Warranties

The Company generally provides a one-year warranty on its nCounter Analysis Systems and establishes a reserve for future warranty costs based on historical product failure rates and actual warranty costs incurred. Warranty expense is recorded as a component of cost of revenue in the consolidated statements of operations.

Research and Development

Research and development expenses, consisting primarily of salaries and benefits, occupancy costs, laboratory supplies, clinical study costs, contracted services, consulting fees and related costs, are expensed as incurred.

Selling, General and Administrative

Selling expenses consist primarily of personnel related costs for sales and marketing, contracted services and service fees and are expensed as the related costs are incurred. Advertising costs are expensed as incurred and are included in sales and marketing expenses. Advertising costs totaled approximately $4.8 million, $5.9 million, and $5.3 million during the years ended December 31, 2018, 2017, and 2016, respectively.

General and administrative expenses consist primarily of personnel related costs for the Company's finance, human resources, business development, legal, information technology and general management, as well as professional fees for legal, accounting, and other consulting services. General and administrative expenses are expensed as they are incurred.

Income Taxes

The Company accounts for income taxes under the liability method. Under the liability method, deferred tax assets and liabilities are determined based on the differences between the financial reporting and income tax bases of assets and liabilities and are measured using the tax rates that will be in effect when the differences are expected to reverse. A valuation allowance is recorded when it is more likely than not that some of the deferred tax assets will not be realized.

The Company determines whether a tax position is more likely than not to be sustained upon examination based on the technical merits of the position. For tax positions meeting the more-likely-than-not threshold, the tax amount recognized in the financial statements is reduced by the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement with the relevant tax authority.

Stock-Based Compensation

The Company accounts for stock-based compensation under the fair value method. Stock-based compensation costs are based on option awards granted and vested based on their grant-date fair value, estimated using the Black-Scholes option pricing model. The Company uses the straight-line attribution method for recognizing compensation expense.

Guarantees and Indemnifications

In the normal course of business, the Company guarantees and/or indemnifies other parties, including vendors, lessors and parties to transactions with the Company, with respect to certain matters. The Company has agreed to hold the other parties harmless against losses arising from breach of representations or covenants, or out of intellectual property infringement or other claims made against certain parties. It is not possible to determine the maximum potential amount the Company could be required to pay under these indemnification agreements, since the Company has not had any prior indemnification claims, and each claim would be based upon the unique facts and circumstances of the claim and the particular provisions of each agreement. In the opinion of management, any such claims would not be expected to have a material adverse effect on the Company's consolidated results of operations, financial condition or cash flows. The Company did not have any related liabilities recorded at December 31, 2018 and 2017.

Comprehensive Loss

Comprehensive loss includes certain changes in equity that are excluded from net loss. Specifically, unrealized gains and losses on short-term investments are included in comprehensive (income) loss.

Recently Adopted Accounting Pronouncement

In May 2014, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") entitled "ASU 2014-09, Revenue from Contracts with Customers." The standard requires an entity to recognize the amount of revenue to which it expects to be entitled for the transfer of promised goods or services to a customer. In March 2016, the FASB issued "ASU 2016-08, Principal vs Agent Considerations (Reporting Revenue Gross versus Net)" which clarifies the implementation guidance on principal versus agent considerations. In April 2016, the FASB issued "ASU 2016-10, Identifying Performance Obligations and Licensing" which clarifies the implementation guidance on

identifying performance obligations and the licensing implementation guidance. In May 2016, the FASB issued “ASU 2016-12, Narrow-Scope Improvements and

Practical Expedients" which provides practical expedients for contract modifications and clarification on assessing the collectability criterion, presentation of sales taxes, measurement date for non-cash consideration and completed contracts at transition. The standards require an entity to recognize the amount of revenue which it expects to be entitled for the transfer of promised goods or services to a customer. This guidance replaces most existing revenue recognition guidance and requires more extensive disclosures related to revenue recognition, particularly in quarterly financial statements. A cumulative effect of applying the new revenue standard has been recognized as an adjustment to the opening balance of retained earnings as of January 1, 2018, using the modified retrospective transition method. The comparative information has not been restated and continues to be reported under the accounting standards in effect for the period presented.

See Note 3. Revenue from Contracts with Customers, for additional accounting policy and transition disclosures.

In January 2016, FASB issued "ASU 2016-01, Financial Instruments: Overall." The standard addresses certain aspects of recognition, measurement, presentation and disclosure of financial instruments. The Company adopted the standard in the first quarter of 2018 and adoption did not have a material impact on its consolidated results of operations, financial condition, cash flows, and financial statement disclosures.

In August 2016, FASB issued "ASU No. 2016-15, Statement of Cash Flows: Classification of Certain Cash Receipts and Cash Payments." The standard provides guidance on the presentation of certain cash receipts and cash payments in the statement of cash flows in order to reduce diversity in existing practice. The Company adopted the standard in the first quarter of 2018 and there was no material impact on its consolidated results of operations, financial condition, cash flows, and financial statement disclosures.

In November 2016, FASB issued "ASU 2016-18, Statement of Cash Flows: Restricted Cash." The standard requires companies to include amounts generally described as restricted cash and restricted cash equivalents, along with cash and cash equivalents, when reconciling the beginning-of-period and end-of-period amounts shown on the statement of cash flows. The Company adopted the standard in the first quarter of 2018 using the retrospective transition method and reflected the impact of this standard in its consolidated cash flows.

In May 2017, FASB issued "ASU 2017-09, Compensation - Stock Compensation: Scope of Modification Accounting." The standard clarifies which changes to the terms or conditions of a share-based payment award are required to be accounted for as modifications. The Company adopted the standard in the first quarter of 2018 prospectively and adoption did not have an impact on its consolidated results of operations, financial condition, cash flows, and financial statement disclosures.

Recent Accounting Pronouncements

In February 2016, FASB issued "ASU 2016-02, Leases – Recognition and Measurement of Financial Assets and Financial Liabilities." The standard requires the recognition of lease assets and lease liabilities by lessees for those leases classified as operating leases. Leases will be classified as either finance or operating, with classification affecting the pattern of expense recognition. In August 2018, FASB issued "ASU 2018-11, Leases (Topic 842): Targeted Improvements," which allows the cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. In December 2018, FASB issued "ASU-2018-20, Leases (Topic 842): Narrow Scope Improvements for Lessors," which provides an election for lessors to exclude sales and related taxes collected from lessees from consideration in the contract, requires lessors to exclude from revenue and expense lessor costs paid directly to third parties by lessees, and clarifies lessors accounting for variable payments related to both lease and nonlease components.

The Company will adopt the standard as of January 1, 2019, using the modified retrospective transition approach to be applied to leases existing as of, or entered into after, January 1, 2019. The Company is in the process of evaluating the impact of this standard and expects it to primarily relate to its operating leases for office and laboratory space noted in "Part 1. Item 2. Properties" of this Annual Report on Form 10-K, for which the Company will record a lease liability and corresponding right-of-use asset upon adoption. Future undiscounted obligations related to the Company's facility leases in effect as of December 31, 2018, are included in the table of future minimum lease payments disclosed in Note 14. The Company does not expect the impact of adoption to have a significant impact on its consolidated results of operations or cash flows, but does anticipate significant new disclosure requirements.

In June 2016, FASB issued "ASU 2016-13, Financial Instruments — Credit Losses (Topic 326)" and subsequently in November 2018, "ASU 2018-19, Codification Improvements to Topic 326, Financial Instruments - Credit Losses." The

standard requires disclosure regarding expected credit losses on financial instruments at each reporting date, and changes how other than temporary impairments on investments securities are recorded. The standard will become effective for the Company beginning January 1, 2020 with early adoption permitted. The Company is currently assessing the impact adoption of this standard will have on its consolidated results of operations, financial condition, cash flows, and financial statement disclosures.

In February 2018, FASB issued “ASU 2018-02, Income Statement — Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income.” The new guidance permits companies to reclassify the stranded tax effects of the Tax Cuts and Jobs Act (the “Act”) on items within accumulated other comprehensive income to retained earnings. The Company will adopt the standard as of January 1, 2019 and is currently assessing the impact adoption of this standard will have on its consolidated results of operations, financial condition, cash flows, and financial statement disclosures.

In August 2018, FASB issued “ASU 2018-15, Intangibles — Goodwill and other — Internal-use software (Subtopic 350-40): Customer’s Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract.” The standard aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software. The standard will become effective for the Company beginning on January 1, 2020, with early adoption permitted. The Company is currently assessing the impact adoption of this standard will have on its consolidated results of operations, financial condition, cash flows, and financial statement disclosures.

In November 2018, the FASB issued “ASU 2018-18, Collaborative Arrangements (Topic 808): Clarifying the Interaction between Topic 808 and Topic 606.” The new guidance clarifies when certain transactions between collaborative arrangement participants which should be accounted for as revenue under Topic 606. The standard will become effective for the Company beginning on January 1, 2020, with early adoption permitted. The Company is currently assessing the impact adoption of this standard will have on its consolidated results of operations, financial condition, cash flows, and financial statement disclosures.

3. Revenue from Contracts with Customers

On January 1, 2018, the Company adopted the new standard for revenue recognition provided in “ASU 2014-09, Revenue from Contracts with Customers” and has applied the modified retrospective transition method to all contracts that were not completed as of January 1, 2018. Results for reporting periods beginning after January 1, 2018 are presented under the new standard, while prior period amounts are not adjusted and continue to be reported under the accounting standards in effect for the prior period. The Company recorded a transition adjustment which reduced opening retained earnings by $0.8 million as of January 1, 2018 due to the cumulative impact of adopting the new revenue standard. The Company's revenues for the twelve months ended December 31, 2018 included the recognition of $0.8 million, as a result of adopting the new revenue standard and satisfying certain performance obligations during the period.

The Company has determined that its collaborative agreements fall within the scope of ASC 808, Collaborative Arrangements, and applies the principles of ASC 606, Revenue from Contracts with Customers, in the measurement and recognition of revenue. In addition, the Company has concluded that when service contracts are sold as part of a bundled arrangement with other products and services, these contracts will no longer be accounted for under separate accounting guidance, but rather included as a separate performance obligation within a contract subject to the new standard, which includes their inclusion in the determination and allocation of the aggregate transaction price, and recognition of revenue upon the delivery of the performance obligation.

Performance obligations

Performance obligations related to instrument sales are reviewed on a contract-by-contract basis, as individual contract terms may vary, and may include installation and calibration services. For instruments sold solely to run Prosigna assays, training to the customer is a required performance obligation prior to any revenue recognition related to the instrument sale. Performance obligations for the Company's consumable products are generally completed upon shipment to the customer.

Disaggregated Revenues

The following table provides information about disaggregated revenue by major product line and primary geographic market (in thousands):

	Year Ended December 31, 2018			
	Americas	Europe and Middle East	Asia Pacific	Total
Product revenue:				
Instruments	$12,033	$6,677	$2,731	$21,441
Consumables	29,653	10,847	3,347	43,847
In vitro diagnostic kits	3,014	6,094	337	9,445
Total product revenue	44,700	23,618	6,415	74,733
Service revenue	6,228	2,097	465	8,790
Total product and service revenue	50,928	25,715	6,880	83,523
Collaboration revenue	23,209	—	—	23,209
Total revenues	$74,137	$25,715	$6,880	$106,732

	Year Ended December 31, 2017[1]			
	Americas	Europe and Middle East	Asia Pacific	Total
Product revenue:				
Instruments	$10,556	$6,561	$3,722	$20,839
Consumables	25,583	9,934	2,794	38,311
In vitro diagnostic kits	2,473	3,982	290	6,745
Total product revenue	38,612	20,477	6,806	65,895
Service revenue	4,592	1,314	209	6,115
Total product and service revenue	43,204	21,791	7,015	72,010
Collaboration revenue	42,895	—	—	42,895
Total revenues	$86,099	$21,791	$7,015	$114,905

	Year Ended December 31, 2016[1]			
	Americas	Europe and Middle East	Asia Pacific	Total
Product revenue:				
Instruments	$12,086	$7,900	$4,243	$24,229
Consumables	27,015	7,481	3,049	37,545
In vitro diagnostic kits	1,517	2,476	175	4,168
Total product revenue	40,618	17,857	7,467	65,942
Service revenue	2,357	640	195	3,192
Total product and service revenue	42,975	18,497	7,662	69,134
Collaboration revenue	17,355	—	—	17,355
Total revenues	$60,330	$18,497	$7,662	$86,489

[1] Amounts have not been retrospectively modified to reflect the adoption of Accounting Standard Update No. 2014-09, Revenue from Contracts with Customers, for the years ended December 31, 2017 and 2016, respectively.

Contract balances and remaining performance obligations

Contract liabilities are included in the current and long-term portions of deferred revenue of $11.5 million and $12.5 million as of December 31, 2018 and December 31, 2017, respectively, and within customer deposits of $8.2 million

and $8.9 million as of December 31, 2018 and December 31, 2017, respectively, on the consolidated balance sheets. Total contract

liabilities decreased by $1.8 million for the twelve months ended December 31, 2018 as a result of cash payments received of $29.0 million related to our collaborations and service contracts, partially offset by the recognition of previously deferred revenue of $30.8 million for the completion of certain performance obligations during the period. The Company did not record any contract assets as of December 31, 2018.

Unsatisfied or partially unsatisfied performance obligations related to collaboration agreements as of December 31, 2018 were $13.4 million and are expected to be completed over the period of each collaboration agreement, through June 2020. Performance obligations related to product and service contracts as of December 31, 2018 were $6.3 million and are expected to be completed over the term of the related contract, through August 2023.

Practical expedients

The Company generally recognizes expense related to the acquisition of contracts, such as sales commissions, at the time of revenue recognition, which is generally in the same period products are sold, and in the case of services, revenue is recognized as services are rendered or over the period of time covered by the service contract, which is typically 12-months from the sale. The Company has not established any contract assets or liabilities related to contract acquisition costs as of December 31, 2018. The Company records commission expenses within selling, general and administrative expenses.

Impact of new revenue standard

In accordance with the new revenue guidance, which the Company adopted effective January 1, 2018, the disclosure of the impact of adoption of this new standard to our consolidated statements of operations was as follows:

	Year Ended December 31, 2018		
(in thousands, except per share amounts)	As Reported	Amounts under previous revenue standard	Effect of Change
Revenue:			
Product and service	$83,523	$82,769	$ 754
Collaboration	23,209	23,209	—
Total revenue	106,732	105,978	754
Net loss	$(77,400)	$(78,154)	$ 754
Net loss per share - basic and diluted	$(2.78)	$(2.80)	$ 0.02

The adoption of the new revenue standard did not have an aggregate impact on the Company’s net cash provided by operating activities, but resulted in offsetting changes in certain liabilities presented within net cash provided by operating activities in the Company’s consolidated statement of cash flows, as reflected in the above tables.

4. Short-term Investments

Short-term investments consisted of available-for-sale securities as follows (in thousands):

Type of securities as of December 31, 2018	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value
Corporate debt securities	$ 47,299	$ 1	$ (21)	$ 47,279
U.S. government-related debt securities	14,972	—	(11)	14,961
Asset-backed securities	$ 7,410	$ —	$ (9)	$ 7,401
Total available-for-sale securities	$ 69,681	$ 1	$ (41)	$ 69,641

Type of securities as of December 31, 2017	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value
Corporate debt securities	$ 35,567	$ —	$ (53)	$ 35,514
U.S. government-related debt securities	15,951	—	(46)	15,905
Total available-for-sale securities	$ 51,518	$ —	$ (99)	$ 51,419

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The fair values of available-for-sale securities by contractual maturity at December 31 were as follows (in thousands):

	2018	2017
Maturing in one year or less	$69,641	$39,985
Maturing in one to three years	—	11,434
Total available-for-sale securities	$69,641	$51,419

The Company has the ability to sell its available-for-sale investments maturing greater than one year within 12 months from the balance sheet date and, accordingly, has classified these securities as current in the consolidated balance sheet.

The following table summarizes investments that have been in a continuous unrealized loss position as of December 31, 2018 (in thousands).

	Less Than 12 Months		12 Months or Greater		Total	
	Fair value	Gross unrealized losses	Fair value	Gross unrealized losses	Fair value	Gross unrealized losses
Corporate debt securities	$14,957	$ (15)	$2,516	$ (6)	$17,473	$ (21)
U.S. government-related debt securities	14,961	(11)	—	—	14,961	(11)
Asset-backed securities	7,401	(9)	—	—	7,401	(9)
Total	$37,319	$ (35)	$2,516	$ (6)	$39,835	$ (41)

The Company invests in securities that are rated investment grade or better. The unrealized losses on investments as of December 31, 2018 and December 31, 2017 were primarily caused by interest rate increases.

The Company reviews the individual securities in its portfolio to determine whether a decline in a security's fair value below the amortized cost basis is other-than-temporary. The Company determined that as of December 31, 2018, there were no investments in its portfolio that were other-than-temporarily impaired.

5. Fair Value Measurements

The Company establishes the fair value of its assets and liabilities using the price that would be received to sell an asset or paid to transfer a financial liability in an orderly transaction between market participants at the measurement date. A fair value hierarchy is used to measure fair value. The three levels of the fair value hierarchy are as follows:

- Level 1 — Quoted prices in active markets for identical assets and liabilities.
- Level 2 — Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs and significant value drivers are observable in active markets.
- Level 3 — Valuations derived from valuation techniques in which one or more significant inputs or significant value drivers are unobservable.

The Company's available-for-sale securities by level within the fair value hierarchy were as follows (in thousands):

Type of securities as of December 31, 2018	Fair value measurement using:			
	Level 1	Level 2	Level 3	Total
Cash equivalents:				
Money market fund	$16,293	$—	$ —	$16,293
Short-term investments:				
Corporate debt securities	—	47,279	—	47,279
U.S. government-related debt securities	—	14,961	—	14,961
Asset-backed securities	—	7,401	—	7,401
Total	$16,293	$69,641	$ —	$85,934

Type of securities as of December 31, 2017	Fair value measurement using: Level 1	Level 2	Level 3	Total
Cash equivalents:				
Money market fund	$22,398	$—	$ —	$22,398
Short-term investments:				
Corporate debt securities	—	35,514	—	35,514
U.S. government-related debt securities	—	15,905	—	15,905
Total	$22,398	$51,419	$ —	$73,817

6. Inventory, Net

Inventory consisted of the following at December 31 (in thousands):

	2018	2017
Raw materials	$3,408	$5,743
Work in process	4,054	4,845
Finished goods	5,711	9,469
Total inventory	$13,173	$20,057

In 2018 and 2017, the Company transferred into property, plant and equipment net amounts totaling $0.6 million and $1.0 million, respectively, of inventory that was leased or loaned to customers, or assigned for internal use in the Company's facilities.

7. Property and Equipment

Property and equipment consisted of the following at December 31 (in thousands):

	Useful Life (Years)	2018	2017
Manufacturing equipment	5	$10,625	$8,395
Lease and loaner instruments	1 - 5	4,305	4,106
Prototype instruments	2	975	2,938
Computer equipment	3	2,095	2,067
Furniture and fixtures	5	1,456	1,670
Leasehold improvements	Various	11,960	11,971
Construction in progress		685	158
Total property and equipment, gross		32,101	31,305
Less: Accumulated depreciation and amortization		(16,930)	(17,248)
Total property and equipment, net		$15,171	$14,057

Prototype instruments consist of nCounter instruments used in internal testing and other development activities. Accumulated depreciation on lease and loaner instruments was $2.4 million and $1.9 million at December 31, 2018 and 2017, respectively.

Depreciation and amortization expense related to property and equipment for the years ended December 31, 2018, 2017, and 2016 totaled approximately $4.0 million, $3.3 million, and $2.9 million, respectively.

8. Long-Term Debt

Term Loan Agreements

In April 2014, the Company entered into a term loan agreement ("2014 Term Loan"), under which it could borrow up to $45.0 million. In October 2015, the Company amended the 2014 Term Loan primarily to increase the maximum borrowing capacity to $60.0 million, excluding deferred interest, reduce the applicable interest rate from 12.5% to 12.0%, extend the interest-only period through March 2021, and extend the final maturity to March 2022. Under the 2014 Term Loan, borrowings accrued interest at 12.0% annually, payable quarterly, of which 3.0% could be deferred during the first six years of the amended term at the Company's option and paid together with the principal at maturity. The Company borrowed a total of $45.0 million

under the 2014 Term Loan through June 2016, excluding deferred interest. On December 31, 2016, the Company's option to borrow the remaining $15.0 million under the 2014 Term Loan expired. Total borrowings and deferred interest under the 2014 Term Loan were $49.3 million as of December 31, 2017.

In October 2018, the Company entered into an amended and restated term loan agreement ("2018 Term Loan"), under which it may borrow up to $100.0 million, which is due and payable in September 2024. At closing, the Company received net proceeds of approximately $7.8 million, pursuant to borrowings of $60.0 million under the new facility, net of repayment of the Company's 2014 Term Loan of $50.4 million, including deferred interest and transaction-related fees and expenses. Of the $40.0 million in additional borrowing capacity under the 2018 Term Loan, the Company has the option to borrow up to $20.0 million until June 2019 subject to no further terms and conditions, and up to an additional $20.0 million until March 2020, subject to the achievement of annual revenue thresholds as at or prior to December 31, 2019.

The term loan agreements involved multiple lenders who were considered members of a loan syndicate. In determining whether the most recent amendment was to be accounted for as a debt extinguishment or a debt modification, the Company considered whether lenders remained the same or changed. As all the lenders who were members of the loan syndicate changed as part of the amended and restated loan agreement, the 2014 Term Loan was extinguished, and the 2018 Term Loan was treated as a new borrowing. The extinguishment resulted in a loss of approximately $0.8 million for the year ended December 31, 2018, which was included in interest expense in the accompanying consolidated statements of operations.

The 2018 Term Loan accrues interest at a rate of 10.5%, payable quarterly, of which 3.0% may be deferred during the six-year term at the Company's option and repaid at maturity together with the principal. The Company paid an upfront fee of 0.5% of the aggregate principal amount of the initial borrowing under the 2018 Term Loan, and will pay a facility fee equal to 2.0% of the total amount borrowed including any deferred interest at the time the principal is repaid. A long-term liability of $1.4 million is being accreted using the effective interest method for the facility fee over the term of the 2018 Term Loan. Additional borrowings under the 2018 Term Loan will bear the same upfront and facility fees as the initial borrowing.

In connection with 2018 Term Loan, warrants to purchase an aggregate of 341,578 shares of common stock with an exercise price per share of $21.12 were issued to the lenders, and, in the event additional amounts are drawn under the 2018 Term Loan, additional warrants will be issued on each subsequent draw date for 0.3% of the fully-diluted shares then outstanding. The exercise price for additional warrants will be set at a 25.0% premium to the average closing trading price for the 30-day trading period as of the date immediately before the applicable draw date. The warrants issued in conjunction with the initial borrowing under the 2018 Term Loan were determined to be closely linked to the Company's stock, and as such, were recorded as an equity security in additional paid in capital at their relative fair value of $1.6 million with a corresponding debt discount recorded against the 2018 Term Loan balance outstanding. Total borrowings and deferred interest under the 2018 Term Loan were $60.4 million as of December 31, 2018. The balance of the 2018 Term Loan as of December 31, 2018 is net of discounts related to the warrants, debt issuance costs and other upfront fees of $2.0 million.

The Company has the option to prepay the 2018 Term Loan, in whole or part, at any time subject to payment of a redemption fee of up to 4.0%, which declines 1.0% after the first year of the term, with no redemption fee payable if prepayment occurs after the second year of the loan.

Obligations under the 2018 Term Loan are collateralized by substantially all of the Company's assets. The 2018 Term Loan contains customary conditions to borrowings, events of default and negative covenants, including covenants that could limit the Company's ability to, among other things, incur additional indebtedness, liens or other encumbrances, make dividends or other distributions; buy, sell or transfer assets; engage in any new line of business; and enter into certain transactions with affiliates. The 2018 Term Loan also includes a $2.0 million minimum liquidity covenant and minimum annual revenue-based financial covenants. If the Company's actual revenues are below the minimum annual revenue requirement for any given year, it may avoid a related default by generating proceeds from an equity or subordinated debt issuance equal to the shortfall between its actual revenues and the minimum revenue requirement.

The Company incurred $7.4 million, $6.2 million, and $5.7 million of interest expense under the term loan agreements for the years ended December 31, 2018, 2017, and 2016, respectively.

2018 Revolving Loan Facility

In January 2018, the Company entered into a $15.0 million secured revolving loan facility, with availability subject to a borrowing base consisting of eligible accounts receivable. In November 2018, the Company entered into an amended and restated loan and security agreement to increase the borrowing capacity under the facility to $20.0 million, amend the borrowing base to include finished goods inventory, and extend the final maturity under the facility to November 2021. As of December 31, 2018, no amounts had been drawn on the facility.

Interest on borrowings is payable monthly and accrues at a yearly rate equal to the greater of the prime rate as reported in the Wall Street Journal plus 0.50%, or 4.75%. During an event of default, amounts drawn accrue interest at a yearly rate equal to 8.75%. Obligations under the agreement are secured by the Company's cash and cash equivalents, accounts receivable and proceeds thereof, and inventory and proceeds from the sale thereof. The lender's interest in the collateral under the loan facility is senior to the lender's interest in such collateral under the term loan agreement. The loan facility contains various customary representations and warranties, conditions to borrowing, events of default, including cross default provisions with respect to the loan facility, and covenants, including financial covenants requiring the maintenance of minimum annual revenue and liquidity. The Company incurred $0.1 million of interest expense under the revolving loan facility for the year ended December 31, 2018.

The Company was in compliance with its financial covenants under the 2018 Term Loan and the secured revolving loan facility as of December 31, 2018.

Long-term debt consisted of the following at December 31 (in thousands):

	2018	2017
Borrowings under term loan agreements	$60,000	$45,000
Paid in-kind interest on term loan agreements	400	4,315
Unamortized debt discounts	(2,004)	(384)
Long-term debt, net of discounts	$58,396	$48,931

Scheduled future payments of principal for outstanding debt were as follows at December 31:

2019	$—
2020	—
2021	—
2022	—
2023	—
Thereafter	60,400
	$60,400

9. Collaboration Agreements

The Company evaluates the statement of operations classification of payments between the participants in each of its collaboration agreements at inception based on the nature of the arrangement, the nature of its business operations and the contractual terms of the arrangement. The Company has determined that amounts to be received from collaborators in connection with the collaboration agreements entered into through December 31, 2018 are related to revenue generating activities.

The Company uses a contingency-adjusted proportional performance model to recognize revenue over the Company's performance period for each collaboration agreement that includes up front, or milestone-based or other contractual payments. Costs incurred to date compared to total expected costs are used to determine proportional performance, as this is considered to be representative of the delivery of outputs under the arrangement. Revenue recognized at any point in time is a factor of and limited to cash received and amounts contractually due. Changes in estimates of total expected costs are accounted for prospectively in the period of change.

The Company recognizes revenue from collaboration agreements that do not include up front, milestone-based, or other contractual payments when earned, which is generally in the same period that related costs are incurred. Amounts due to collaboration partners are recognized when the related activities have occurred and are classified in the statement of operations, generally as research and development expense, based on the nature of the related activities.

Lam Research Corporation

In August 2017, the Company entered into a collaboration agreement with Lam Research Corporation ("Lam") with respect to the development of the Company's Hyb & Seq platform product candidate. Pursuant to the terms of the collaboration agreement, Lam will contribute up to an aggregate of $50.0 million, with amounts thereunder payable quarterly, to be applied to the research and development of the Company's Hyb & Seq platform, based on allowable development costs. Lam is eligible to receive certain single-digit percentage royalty payments from the Company on net sales of certain products and technologies developed under the collaboration agreement, if any such net sales are ever achieved. The maximum amount of royalties payable to Lam will be capped at an amount up to three times the

amount of development funding actually provided by Lam. The Company retains exclusive rights to obtain regulatory approval, manufacture and commercialize the Hyb & Seq products.

Lam participates in research and product development through a joint steering committee. The Company will reimburse Lam for the cost of up to 10 full-time Lam employees each year in accordance with the product development plan.

In connection with the execution of the collaboration agreement, the Company issued Lam a warrant to purchase up to 1.0 million shares of the Company's common stock with the number of underlying shares exercisable at any time proportionate to the amount of the $50.0 million commitment that has been provided by Lam. The exercise price of the warrant is $16.75 per share, and the warrant will expire on the seventh anniversary of the issuance date. The warrant was determined to have a fair value of $6.7 million upon issuance, and such amount will be recorded as additional paid in capital proportionately from the quarterly collaboration payments made by Lam.

The Company recognized revenue related to the Lam agreement of $18.6 million and $3.7 million for the years ended December 31, 2018 and 2017, respectively. The Company received development funding of $21.7 million and $13.4 million related to the Lam collaboration for the years ended December 31, 2018 and 2017, respectively. At December 31, 2018, the Company had recorded $1.9 million of deferred revenue related to the Lam collaboration, of which $1.2 million is estimated to be recognizable as revenue within one year. In addition, $7.3 million and $8.3 million are included in customer deposits in the consolidated balance sheets as of December 31, 2018 and 2017, respectively, which represents amounts received in advance. The Company incurred costs of $0.3 million for the year ended December 31, 2018 related to services provided by Lam employees under the terms of the agreement. As of December 31, 2018, Lam had not exercised any warrants.

Celgene Corporation

In March 2014, the Company entered into a collaboration agreement with Celgene Corporation ("Celgene") to develop, seek regulatory approval for, and commercialize a companion diagnostic using the nCounter Analysis System to identify a subset of patients with Diffuse Large B-Cell Lymphoma. In February 2018, the Company and Celgene entered into an amendment to their collaboration agreement in which Celgene agreed to provide the Company additional funding for work intended to enable a subtype and prognostic indication for the test being developed under the agreement for Celgene's drug REVLIMID. In connection with this amendment, the Company agreed to remove the right to receive payments from Celgene in the event commercial sales of the companion diagnostic test do not exceed certain pre-specified minimum annual revenues during the first three years following regulatory approval. In addition, the amendment allows Celgene, at its election, to use trial samples with additional technologies for companion diagnostics.

Pursuant to the Company's agreement as amended in February 2018, the Company is eligible to receive payments from Celgene totaling up to $24.8 million, of which $5.8 million was received as an upfront payment upon delivery of certain information to Celgene and $19.0 million is for development funding and potential success-based development and regulatory milestones. There have been several amendments to the collaboration agreement and in return the Company has received additional payments totaling $2.1 million. The Company will retain all commercial rights to the diagnostic test developed under this collaboration, subject to certain backup rights granted to Celgene to commercialize the diagnostic test in a particular country if the Company elects to cease distribution or elects not to distribute the diagnostic in such country. Assuming success in the clinical trial process, and subject to regulatory approval, the Company will market and sell the diagnostic assay.

The process of successfully developing a product candidate, obtaining regulatory approval and ultimately commercializing a product candidate is highly uncertain and the attainment of any additional milestones is therefore uncertain and difficult to predict. In addition, certain milestones are outside the Company's control and are dependent on the performance of Celgene and the outcome of a clinical trial and related regulatory processes. Accordingly, the Company is not able to reasonably estimate when, if at all, any additional milestone payments may be payable to the Company by Celgene.

The Company recognized revenue related to the Celgene agreement of $2.6 million, $0.2 million, and $3.2 million for the years ended December 31, 2018, 2017, and 2016, respectively. At December 31, 2018, the Company had recorded $4.0 million of deferred revenue related to the Celgene collaboration, all of which is estimated to be recognizable as revenue within one year.

Merck & Co., Inc.

In May 2015, the Company entered into a clinical research collaboration agreement with Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc. (“Merck”), to develop an assay intended to optimize immune-related gene expression signatures and evaluate the potential to predict benefit from Merck’s anti-PD-1 therapy, KEYTRUDA. Under the terms of the collaboration agreement, the Company received $3.9 million in payments during 2015. In connection with the execution of the development collaboration agreement, the Company and Merck terminated the May 2015 clinical research collaboration and moved all remaining activities under the related work plan to the new development collaboration agreement. In February 2016, the Company expanded its collaboration with Merck by entering into a new development collaboration agreement to clinically develop, seek regulatory approval for, and commercialize a companion diagnostic test to predict response to KEYTRUDA in multiple tumor types. During 2016, the Company received $12.0 million upfront as a technology access fee and $8.5 million of preclinical milestone payments. In October 2017, Merck notified the Company of its decision not to pursue regulatory approval

of the companion diagnostic test for KEYTRUDA and, in August 2018, the Company and Merck agreed to mutually terminate their development collaboration agreement, effective as of September 30, 2018, following the completion of certain close-out activities. As part of the mutual termination agreement, Merck granted to the Company a non-exclusive license to certain intellectual property that relates to Merck's tumor inflammation signature.

The Company recognized revenue related to the Merck agreement of $1.6 million, $27.0 million, and $8.6 million for the years ended December 31, 2018, 2017, and 2016, respectively. The Company received development funding of $1.1 million, $6.8 million, and $8.7 million for the years ended December 31, 2018, 2017, and 2016, respectively. As of December 31, 2018, there is no remaining deferred revenue related to the Merck collaboration.

Medivation, Inc. and Astellas Pharma, Inc.

In January 2016, the Company entered into a collaboration agreement with Medivation, Inc. ("Medivation") and Astellas Pharma Inc. ("Astellas") to pursue the translation of a novel gene expression signature algorithm discovered by Medivation into a companion diagnostic assay using the nCounter Analysis System. In September 2016, Medivation was acquired by Pfizer, Inc. ("Pfizer") and became a wholly owned subsidiary of Pfizer. In May 2017, the Company received notification from Pfizer and Astellas terminating the collaboration agreement as a result of a decision to discontinue the related clinical trial.

The Company recognized revenue related to the Medivation/Astellas agreement of $11.5 million and $4.8 million for the years ended December 31, 2017 and 2016, respectively, including the favorable impact of a $1.0 million termination penalty during 2017. The Company achieved and was paid for milestones totaling $6.0 million during 2016. The Company received development funding of $0.9 million, and $2.4 million for the years ended December 31, 2017 and 2016, respectively.

10. Common Stock and Preferred Stock

Public Offerings

In May 2015, the Company entered into a sales agreement with a sales agent to sell shares of the Company's common stock through an "at the market" equity offering program for up to $40.0 million in total sales proceeds. Pursuant to the sales agreement, the Company sold 1,331,539 and 960,400 shares during 2016 and 2015, respectively, for net proceeds of $26.1 million and $12.5 million, respectively. The Sales Agreement automatically terminated when the Company sold the maximum number of shares allowed under the agreement.

In June 2017, the Company completed an underwritten public offering of 3,450,000 shares of common stock, including the exercise by the underwriter of an over-allotment option for 450,000 shares of common stock, for total gross proceeds of $57.8 million. After underwriter's fees and commissions and other expenses of the offering, the Company's aggregate net proceeds were approximately $56.5 million.

In January 2018, the Company entered into a Sales Agreement with a sales agent to sell shares of the Company's common stock through an "at the market" equity offering program for up to $40.0 million in gross cash proceeds. The Sales Agreement allows the Company to set the parameters for the sale of shares, including the number of shares to be issued, the time period during which sales are requested to be made, limits on the number of shares that may be sold in any one trading day and a minimum price below which sales may not be made. Under the terms of the Sales Agreement, commission expenses to the sales agent will be 3% of the gross sales price per share sold through the sales agent. The Sales Agreement shall automatically terminate upon the issuance and sale of shares that provide gross proceeds of $40.0 million and may be terminated earlier by either the Company or the sales agent upon five days' notice.

In July 2018, the Company completed an underwritten public offering of 4,600,000 shares of common stock, including the exercise in full by the underwriters of their option to purchase 600,000 additional shares of common stock in August 2018, for total gross proceeds of $57.5 million. After underwriter's commissions and other expenses of the offering, the Company's aggregate net proceeds were approximately $53.8 million.

Common Stock

Each share of common stock is entitled to one vote. The holders of common stock are also entitled to receive dividends whenever funds are legally available and when declared by the board of directors, subject to the prior rights of holders of other classes of stock outstanding.

Preferred Stock

Pursuant to the amended and restated certificate of incorporation filed by the Company immediately prior to the completion of its initial public offering, the Company's board of directors is authorized to issue up to 15,000,000 shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. These rights,

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preferences and privileges could include dividend rights, conversion rights, voting rights, redemption rights, liquidation preferences, sinking fund terms and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of common stock. The issuance of preferred stock could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments upon liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing change in the Company's control or other corporate action. As of December 31, 2018, no shares of preferred stock were issued or outstanding, and the board of directors has not authorized or designated any rights, preferences, privileges and restrictions for any class of preferred stock.

Warrants

Prior to the Company's initial public offering, warrants to purchase preferred stock were issued related to certain financing transactions. All preferred stock warrants were converted into warrants to purchase common stock upon the effectiveness of the initial public offering. In addition, the Company has issued common stock warrants to third parties in accordance with the provisions of certain debt and collaboration agreements. As of December 31, 2018, there were 905,798 common stock warrants outstanding with a weighted average exercise price of $18.38 per share and expiration dates ranging from 2022 to 2025.

11. Stock-based Compensation

2004 Stock Option Plan and 2013 Equity Incentive Plan

The Company's 2004 Stock Option Plan, 2013 Equity Incentive Plan, and the 2018 Inducement Equity Incentive Plan (the "Plans") authorize the grant of options, restricted stock units ("RSUs") and other equity awards to employees, directors and consultants. As of December 31, 2018, there were 9,022,827 shares authorized under the Plans. All options granted have a ten-year term and generally vest and become exercisable over four years of continued employment or service as defined in each option agreement. The Board of Directors determines the option exercise price and may designate stock options granted as either incentive or nonstatutory stock options. The Company generally grants stock options to employees with exercise prices equal to the estimated fair value of the Company's common stock on the date of grant.

Stock Option Activity

A summary of the Company's stock option activity under the Plans is as follows:

	Shares	Weighted-average exercise price per share	Weighted-average remaining contractual term (in years)	Aggregate intrinsic value (in thousands)
Outstanding at January 1,2018	5,196,253	$ 13.32	6.98	$ 3,861
Granted	1,186,944	8.69		
Canceled and forfeited	(910,243)	14.48		
Exercised	(430,602)	8.14		
Outstanding at December 31, 2018	5,042,352	$ 12.46	6.49	$ 18,255
December 31, 2018:				
Options vested and expected to vest	5,042,352	$ 12.46	6.49	$ 18,255
Options exercisable	3,381,664	$ 12.48	5.49	$ 12,099

The weighted-average grant-date fair value per share of options granted with exercise prices equal to the market price on the date of the grant were $4.78, $9.08, and $6.79 for the years ended December 31, 2018, 2017, and 2016, respectively. The aggregate intrinsic value in the table above is calculated as the difference between the exercise price of the underlying options and the quoted price of the Company's common stock for all options that were in-the-money at December 31, 2018. The aggregate intrinsic value of options exercised was $2.2 million during 2018, $2.4 million during 2017, and $5.0 million during 2016, determined as of the option exercise date. The fair value of options vested was $6.8 million, $8.9 million, and $6.8 million for the years ended December 31, 2018, 2017, and 2016, respectively.

The following table summarizes information about the Company's stock options outstanding at December 31, 2018:

	Outstanding		Exercisable	
Exercise Price	Number of Shares	Weighted-Average Remaining Contractual Life in Years	Number of Shares	Weighted-Average Remaining Contractual Life in Years
$1.92	357,609	3.22	357,609	3.22
$2.24 – $6.72	344,531	2.62	336,231	2.46
$6.80 – $12.56	1,225,090	7.94	462,948	6.15
$12.77	484,976	5.83	463,659	5.82
$12.89 – $12.94	436,867	6.90	298,921	6.73
$13.01 – $14.95	322,713	7.22	223,186	6.61
$14.99 – $17.48	464,533	7.35	293,914	6.78
$17.83 – $18.90	1,150,432	6.49	777,347	5.62
$19.09 – $22.71	255,601	7.26	167,849	7.12
	5,042,352		3,381,664	

Restricted Stock Unit (RSU) Activity

A summary of RSU activity under the Plans is as follows:

Non-vested RSUs	Share Equivalent	Weighted-Average Grant Date Fair Value
Non-vested at January 1, 2018	661,707	$ 11.07
Changes during the year:		
Granted	711,001	7.41
Vested	(109,469)	14.82
Forfeited	(122,110)	8.73
Non-vested at December 31, 2018	1,141,129	$ 8.68

The fair value of the RSUs is determined based on the closing price of the Company's common stock on the date of grant. The fair value of vested RSUs was $1.0 million, $1.1 million, and $64,000 for the years ended December 31, 2018, 2017, and 2016, respectively.

Stock-based compensation

The following table sets forth stock-based compensation expense related to stock-based arrangements under the Plans for the years ended December 31 as follows (in thousands):

	2018	2017	2016
Cost of revenue	$616	$719	$548
Research and development	3,156	2,853	2,046
Selling, general and administrative	6,982	7,047	5,602
Total stock-based compensation expense	$10,754	$10,619	$8,196

As of December 31, 2018, total unrecognized stock-based compensation cost related to non-vested options and RSUs was $15.7 million. This cost will be recognized on a straight-line basis over the weighted-average remaining service period of 2.16 years. The Company utilizes newly issued shares to satisfy option exercises. No tax benefit was recognized related to stock-based compensation cost since the Company has not reported taxable income to date and has established a full valuation allowance to offset all of the potential tax benefits associated with its deferred tax assets.

Valuation assumptions

The fair value of each employee option grant as of December 31 was estimated on the date of grant using the Black-Scholes option pricing model with the following assumptions:

	2018	2017	2016
Risk-free interest rates	2.22% - 3.01%	1.40% - 2.26%	1.18% - 2.12%
Expected term (years)	5.50 - 6.09	5.50 - 6.25	5.50 - 6.50
Expected dividend yield	—	—	—
Expected volatility	56.0% - 57.7%	53.9% - 58.0%	47.0%

The risk-free interest rates are based on the implied yield currently available in U.S. Treasury securities at maturity with an equivalent term. For purposes of determining the expected term of the awards in the absence of sufficient historical data relating to stock-option exercises, the Company applies a simplified approach in which the expected term of an award is presumed to be the mid-point between the vesting date and the expiration date of the award. The Company has not declared or paid any dividends and does not currently expect to do so in the foreseeable future. Expected volatility is based on the historical cumulative volatility of the Company's stock price.

Employee Stock Purchase Plan

The Company's 2013 Employee Stock Purchase Plan ("ESPP") provides eligible employees with an opportunity to purchase common stock from the Company and to pay for their purchases through payroll deductions. The ESPP has overlapping offering periods of approximately 12 months in length. The offering periods generally start with the first trading day on or after March 1 and September 1 of each year and end on the first trading day on or after March 1 and September 1 of the following year, approximately 12 months later. Within each offering period, shares are purchased each six months on an exercise date.

An employee electing to participate in the ESPP (a "participant") will be granted an option at the start of the offering period to purchase shares with contributions in any whole percentage ranging from 0% to 10% (or greater or lesser percentages or dollar amounts that the administrator determines) of the participant's eligible compensation. The participant's contributions will be accumulated and then used to purchase the Company's shares on each exercise date. The purchase price on the exercise date will be 85% of the fair market value of the lesser of the Company's share price on either the first trading day of the offering period or on the exercise date.

During 2018, 2017, and 2016, shares issued under the ESPP were 257,132, 138,972, and 139,195, respectively. The Company recorded share-based compensation expense for shares issued from the ESPP of $0.7 million, $0.8 million, and $0.8 million for the years ended December 31, 2018, 2017, and 2016, respectively. A total of 1,079,647 shares of common stock have been reserved for issuance under the ESPP, of which 266,884 shares were available for issuance as of December 31, 2018.

12. Defined Contribution Retirement Plan

The Company maintains a 401(k) defined contribution retirement plan covering substantially all of its employees. The plan provides for matching and discretionary contributions by the Company. Contributions were $1.3 million, $1.2 million, and $0.9 million for the years ended December 31, 2018, 2017, and 2016, respectively.

13. Income Taxes

Loss before income taxes for the years ended December 31 consisted of the following (in thousands):

	2018	2017	2016
Domestic	$(78,124)	$(44,324)	$(47,562)
Foreign	973	966	589
Loss before income taxes	$(77,151)	$(43,358)	$(46,973)

Significant components of our provision for income taxes for the years ended December 31 are as follows (in thousands):

	2018	2017	2016
Current:			
Domestic	$—	$—	$—
Foreign	249	204	116
Total provision for income taxes	$249	$204	$116

The Tax Cuts and Jobs Act, or the Act, was enacted on December 22, 2017, which reduced the U.S. federal corporate tax rate from 35% to 21%, among other changes. The Company's accounting for the elements of the Act is complete and resulted in a $37.7 million reduction in its net deferred tax assets as of December 31, 2017 to reflect the new statutory rate. The rate adjustment to the deferred tax assets was fully offset by a decrease in the valuation allowance, resulting in no rate impact to the Company.

A reconciliation of the federal statutory income tax rate to the effective income tax rate for the years ended December 31 are as follows (in thousands):

	2018	2017	2016
Income tax provision at statutory rate	$(16,202)	$(15,076)	$(16,010)
Tax on repatriated foreign earnings and other nondeductible items	195	179	135
Change in tax credits	(2,148)	(2,361)	(1,449)
Change in valuation allowance	19,935	(19,792)	17,824
Change in tax rate	—	37,690	—
Foreign tax and other	(1,531)	(436)	(384)
Total provision for income taxes	$249	$204	$116

At December 31, 2018, for income tax return purposes the Company has gross federal and state NOL carryforwards totaling $339.3 million and tax credit carryforwards of $9.1 million. The gross federal NOL carryforwards generated during and after fiscal 2018 totaling $55.0 million are carried forward indefinitely, while all others, if not utilized, will expire beginning in 2025 through 2038. The carryforwards may be subject to limitations under the Internal Revenue Code and applicable state tax law.

The Company does not expect to utilize any of its net operating loss and tax credit carryforwards in the near term. The Company may have already experienced one or more ownership changes. Depending on the timing of any future utilization of its carryforwards, the Company may be limited as to the amount that can be utilized each year as a result of such previous ownership changes. However, the Company does not believe such limitations will cause its carryforwards to expire unutilized.

Future changes in the Company's stock ownership as well as other changes that may be outside the Company's control could potentially result in further limitations on the Company's ability to utilize its net operating loss and tax credit carryforwards.

The effect of temporary differences and carryforwards that give rise to deferred tax assets for the years ended December 31 were as follows (in thousands):

	2018	2017
Net operating loss carryforwards	$63,442	$49,662
Research and development tax credit carryforwards	8,491	6,505
Foreign tax credit carryforwards	613	448
Stock-based compensation	7,703	5,664
Other	8,347	6,382
Total deferred tax assets	88,596	68,661
Less: Valuation allowance	(88,596)	(68,661)
Net deferred tax assets	$—	$—

The Company has recorded a full valuation allowance related to its deferred tax assets due to the uncertainty of the ultimate realization of the future benefits from those assets.

The table below summarizes changes in the deferred tax asset valuation allowance for the years ended December 31 (in thousands):

	2018	2017	2016
Balance at beginning of year	$68,661	$88,453	$70,629
Charged to costs and expenses	19,935	17,898	17,824
Impact of change in tax rate	—	(37,690)	—
Balance at end of year	$88,596	$68,661	$88,453

The total balance of unrecognized gross tax benefits for the years ended December 31, resulting from research and development tax credits claimed on the Company's annual tax return was as follows (in thousands):

	2018	2017	2016
Unrecognized tax benefits at beginning of year	$2,168	$1,524	$1,041
Additions based on current year tax positions	662	644	483
Unrecognized tax benefits at end of year	$2,830	$2,168	$1,524

The Company classifies applicable interest and penalties on amounts due to tax authorities as a component of the provision for income taxes. The amount of accrued interest and penalties recorded in 2018, 2017, or 2016 was not significant. The Company does not anticipate that the amount of its existing unrecognized tax benefits will significantly increase or decrease within the next 12 months. Due to the presence of net operating loss carryforwards in most jurisdictions, the Company's tax years remain open for examination by U.S. taxing authorities back to 2004.

14. Commitments and Contingencies

Operating Leases

The Company is obligated to make future minimum payments under three operating leases for 107,901 square feet of space used for general office, laboratory, manufacturing, operations, and research and development purposes primarily in Seattle, Washington. The leases expire beginning in 2019 to 2026 and include options to renew at the then current fair market rental for each of the facilities. The lease agreements contain rent abatement periods, scheduled rent increases and provide for tenant improvement allowances. Accordingly, the Company has recorded a deferred rent liability of $8.2 million and $8.7 million as of December 31, 2018 and 2017, respectively. This deferred rent liability is amortized over the term of the related lease.

Rent expense totaled approximately $4.9 million, $4.8 million, and $3.8 million for the years ended December 31, 2018, 2017, and 2016, respectively.

Future minimum lease payments under noncancelable operating leases as of December 31, 2018 were as follows (in thousands):

2019	$5,526
2020	5,560
2021	5,593
2022	5,708
2023	5,869
Thereafter	13,458
	$41,714

Purchase Commitments

The Company has non-cancellable purchase obligations totaling $17.7 million at December 31, 2018 related to binding commitments to purchase inventory and other research and development items.

Contingencies

From time to time, the Company may become involved in litigation relating to claims arising from the ordinary course of business. Additionally, the Company operates in various states and local jurisdictions for which sales, occupation, or franchise taxes may be payable to certain taxing authorities. Management believes that there are no claims or actions pending

against the Company currently, the ultimate disposition of which would have a material adverse effect on the Company's consolidated results of operation, financial condition or cash flows.

15. Net Loss Per Share

Net loss per share is computed by dividing the net loss by the weighted average number of shares of common stock outstanding. Outstanding stock options, warrants and preferred stock have not been included in the calculation of diluted net loss per share because to do so would be anti-dilutive. Accordingly, the numerator and the denominator used in computing both basic and diluted net loss per share for each period are the same.

The following outstanding options, restricted stock units and warrants as of December 31 were excluded from the computation of diluted net loss per share for the periods presented because their effect would have been anti-dilutive (in thousands):

	2018	2017	2016
Options to purchase common stock	5,395	5,335	4,711
Restricted stock units	1,147	313	115
Common stock warrants	535	317	491

16. Information about Geographic Areas

The following table is based on the geographic location of distributors or end users who purchased products and services and collaborators. For sales to distributors, their geographic location may be different from the geographic locations of the ultimate end user. Revenue by geography as of December 31 was as follows (in thousands):

	2018	2017	2016
Americas	$74,137	$86,099	$60,330
Europe & Middle East	25,715	21,791	18,497
Asia Pacific	6,880	7,015	7,662
Total revenue	$106,732	$114,905	$86,489

Total revenue in the United States was $71.2 million, $84.0 million, and $58.0 million for the years ended December 31, 2018, 2017, and 2016, respectively. The Company's assets are primarily located in the United States and not allocated to any specific geographic region. Substantially all of the Company's long-lived assets are located in the United States.

17. Condensed Quarterly Financial Data (unaudited)

The following table contains selected unaudited financial data for each quarter of 2018 and 2017. The unaudited information should be read in conjunction with the Company's financial statements and related notes included elsewhere in this report. The Company believes that the following unaudited information reflects all normal recurring adjustments necessary for a fair statement of the information for the periods presented. The operating results for any quarter are not necessarily indicative of results for any future period.

	Three months ended			
	March 31,	June 30,	September 30,	December 31,
	(in thousands, except per share data)			
2018				
Total revenue	$23,085	$24,999	$ 28,616	$ 30,032
Product and service gross profit	$10,350	$11,832	$ 12,162	$ 12,848
Net loss	$(19,202)	$(20,601)	$ (16,486)	$ (21,111)
Net loss per share – basic and diluted	$(0.75)	$(0.80)	$ (0.56)	$ (0.68)
2017				
Total revenue	$18,063	$34,592	$ 27,016	$ 35,234
Product and service gross profit	$8,602	$10,086	$ 9,610	$ 11,832
Net loss	$(18,852)	$(4,555)	$ (11,404)	$ (8,751)
Net loss per share – basic and diluted	$(0.87)	$(0.20)	$ (0.45)	$ (0.34)

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

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and our Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2018. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the U.S. Securities and Exchange Commission's ("SEC") rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company's management, including its Chief Executive and Chief Financial Officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of December 31, 2018, our Chief Executive Officer and Chief Financial Officer have concluded that, as of such date, our disclosure controls and procedures were not effective due to the material weaknesses in internal control over financial reporting, described below.

Following identification of the material weaknesses and prior to filing this Annual Report on Form 10-K, we completed substantive procedures for the year ended December 31, 2018. Based on these procedures, management concluded that our consolidated financial statements included in this Form 10-K have been prepared in accordance with U.S. GAAP. Our Chief Executive Officer and Chief Financial Officer have certified that, based on their knowledge, the financial statements, and other financial information included in this Form 10-K, fairly present in all material respects the financial condition, results of operations and cash flows of the Company as of, and for, the periods presented in this Form 10-K. PricewaterhouseCoopers, LLP, an independent registered public accounting firm, has issued an unqualified opinion on our consolidated financial statements, which is included in Item 8 of this Form 10-K.

Management's Annual Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act. Our internal control over financial reporting is a process 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. Our internal control over financial reporting includes those policies and procedures that:

(i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets;

(ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and

(iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our 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. Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2018. In making this assessment, our management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) Internal Control—Integrated Framework (2013). A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not

be prevented or detected on a timely basis.

We identified a material weakness related to (i) an ineffective control environment as we had an insufficient complement of resources with an appropriate level of information technology (“IT”) controls knowledge, expertise and training commensurate with our financial reporting requirements. This material weakness contributed to additional material weaknesses:

(ii) We did not design and maintain effective controls over certain IT general controls for the significant applications used in the preparation of the financial statements. Specifically, we did not maintain user access controls to adequately restrict user and privileged access to the financial application, programs, and data to appropriate personnel.

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Additionally, we also did not maintain adequate program change management controls for certain financial systems to ensure that IT program and data changes affecting financial applications and underlying accounting records are identified, tested, authorized and implemented appropriately.

(iii) We did not design and maintain controls to timely detect and independently review instances where individuals with access to post a journal entry may also have edited or created the journal entry.

These material weaknesses did not result in any identified misstatements to our annual or interim financial statements, and there were no changes to previously released financial results. These material weaknesses could result in a misstatement to the account balances or disclosures within the financial statements that would result in a material misstatement to the annual or interim consolidated financial statements that would not be prevented or detected. Based on these material weaknesses, management concluded that as of December 31, 2018, our internal control over financial reporting was not effective.

The effectiveness of our internal control over financial reporting as of December 31, 2018 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears herein.

Remediation Efforts

Management has been implementing and continues to implement measures designed to ensure that control deficiencies contributing to the material weaknesses are remediated, such that these controls are designed, implemented, and operating effectively. The remediation actions include: (i) implementing an improved IT process and system for approving, monitoring and implementing IT changes to key systems which impact our financial reporting; (ii) implementing improved processes for requesting, authorizing, and reviewing user access to key systems which impact our financial reporting, including identifying access to roles where manual business process controls may be required; (iii) enhancing our training programs and documentation practices which address ITGCs and related policies; and (iv) enhanced quarterly reporting on the remediation measures to the Audit Committee of the Board of Directors. We believe that these actions will remediate the material weaknesses. The material weaknesses will not be considered remediated, however, until the applicable controls operate for a sufficient period of time and management has concluded, through testing, that these controls are operating effectively.

Changes in Internal Control over Financial Reporting

There have been no changes in our internal control over financial reporting identified in connection with the evaluation required by Rules 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the quarter ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Information Concerning our Directors

The following table sets forth the name, age and certain background information regarding each member of the board of directors as of March 11, 2019. There are no family relationships among any of the directors or executive officers.

Nominees	Class	Age	Position	Director Since
R. Bradley Gray	I	42	Director, President and Chief Executive Officer	2010
William D. Young[1][3]	III	74	Chairman of the Board	2010
Elisha W. Finney[1]	II	57	Director	2017
Nicholas Galakatos, Ph.D.[2*][3]	III	61	Director	2009
Robert M. Hershberg, M.D., Ph.D.[3]	I	56	Director	2015
Kirk D. Malloy, Ph.D.[2]	I	52	Director	2016
Gregory Norden[1*][2]	II	61	Director	2012
Charles P. Waite[1][3*]	II	63	Director	2004

[1] Member of the audit committee

[2] Member of the compensation committee

[3] Member of the nominating and corporate governance committee

* Denotes chair of such committee

R. Bradley Gray has served as a member of the board of directors and as President and Chief Executive Officer since June 2010. Prior to joining our company, Mr. Gray held various positions at Genzyme, a biotechnology company acquired by Sanofi in 2011. He served as Vice President of Product & Business Development for Genzyme Genetics, the diagnostic services division of Genzyme, from June 2008 to May 2010, leading the development of molecular diagnostics and partnering activities. From September 2006 to June 2008, he served as Vice President of Business & Strategic Development for Genzyme Genetics, leading growth efforts through partnerships and licensing. Mr. Gray joined Genzyme in October 2004 as Director of Corporate Development, supporting business development and leading Genzyme Ventures, the corporate venture capital fund of Genzyme. Prior to joining Genzyme, Mr. Gray was a management consultant in the healthcare practice of McKinsey & Company, a global management consulting firm, from September 2000 to October 2004, where he worked with senior healthcare executives in the United States and Europe on a broad range of issues including pharmaceutical and diagnostic product strategy, post-merger integration, organization design, and operational turnarounds. Mr. Gray received a B.A. in Economics and Management from Oxford University, where he studied as a British Marshall Scholar, and an S.B. in Chemical Engineering from the Massachusetts Institute of Technology. We believe that Mr. Gray possesses specific attributes that qualify him to serve as a director, including the perspective and experience he brings as Chief Executive Officer and his knowledge of molecular diagnostic development and commercialization.

William D. Young has served as the chairman of the board of directors since January 2010 and as a member of the audit committee since November 2011 and nominating and corporate governance committee since September 2013. Mr. Young is a Senior Advisor at Blackstone Life Sciences since November 2018, following Blackstone's acquisition of Clarus Ventures. Prior to Blackstone he was a Venture Partner at Clarus Ventures, a health care and life sciences venture capital firm, which he joined in March 2010. Prior to joining Clarus Ventures, Mr. Young served from 1999 until June 2009 as chairman of the board of directors and Chief Executive Officer of Monogram Biosciences, a biotechnology company acquired by Laboratory Corporation of America in June 2009. From 1980 to 1999 Mr. Young was employed at Genentech, a biotechnology company acquired by Roche in March 2009, most recently as Chief Operating Officer from 1997 to 1999, where he was responsible for all Product Development, Manufacturing and Commercial functions. Mr. Young joined Genentech in 1980 as Director of Manufacturing and Process Sciences and became Vice President in 1983. Prior to joining Genentech, Mr. Young worked at Eli Lilly & Co. for 14 years and held various positions in production and process engineering, antibiotic process development and production management. Mr. Young is a member of the boards of directors of Vertex Pharmaceuticals and Theravance Biopharma where he is the lead independent director. Mr. Young retired from BioMarin Pharmaceutical's board of directors in November 2015 and from Biogen Inc.'s board of directors as chairman in June 2014. Mr. Young received

his M.B.A. from Indiana University and his B.S. in chemical engineering from Purdue University, and an honorary doctorate of engineering from Purdue University. Mr. Young was elected to The National Academy of Engineering in 1993 for his contributions to

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biotechnology. We believe that Mr. Young's demonstrated leadership in his field, his understanding of the industry and his senior management experience in several companies in our industry qualify him to serve as the chairman of the board of directors.

Elisha W. Finney has served as a member of the board of directors and as a member of the audit committee since May 2017. Ms. Finney retired in May 2017 from her position as the Executive Vice President and CFO of Varian Medical Systems, a publicly-traded developer of cancer care solutions. At Varian, her management responsibilities included corporate accounting, corporate communications and investor relations, internal audit, risk management, tax and treasury, and corporate information systems. Ms. Finney was named vice president, finance and CFO of Varian Medical Systems in April 1999, Senior Vice President and CFO in 2005 and Executive Vice President and CFO in 2012. She joined Varian as risk manager in 1988. Prior to joining Varian, Ms. Finney was with the Fox Group, a property management company in Foster City, California and Beatrice Foods in Chicago, Illinois. She holds a BA degree in risk management and insurance from the University of Georgia as well as an MBA degree from Golden Gate University in San Francisco. Ms. Finney currently serves on the board of directors at ICU Medical, Inc., a publicly traded infusion-therapy company, iRobot Corporation, a publicly-traded maker of consumer robots, CUTERA, Inc., a publicly-traded maker of cosmetic and aesthetic laser equipment, and METTLER-TOLEDO International Inc., a publicly-traded maker and marketer of precision instruments for use in laboratory, industrial and food retailing applications, and she previously served as a board member at Altera Corporation, Thoratec and Laserscope. We believe that Ms. Finney is qualified to serve as a director of NanoString because of her more than 25 years of financial and life science expertise.

Nicholas Galakatos, Ph.D. has served as a member of the board of directors, as the chairman of the compensation committee and as a member of the nominating and corporate governance committee since June 2009. Dr. Galakatos is a Senior Managing Director of Blackstone, and Head of the Blackstone Life Sciences business since November 2018, following Blackstone's acquisition of Clarus Ventures. Prior to Blackstone, he was Managing Director of Clarus Ventures, a health care and life sciences venture capital firm, which he co-founded in 2005. Dr. Galakatos has been a venture capital investor since 1992, initially at Venrock Associates from 1992 to 1997 and then at MPM Capital since 2000 where he was General Partner of the Bioventures II and Bioventures III funds. From 1997 to 2000, he was Vice President, New Business, and a member of the Management Team at Millennium Pharmaceuticals, a biopharmaceutical company acquired by Takeda Pharmaceutical in May 2008. He was a founder of Millennium Predictive Medicine and TransForm Pharmaceuticals, where he also was the Chairman and founding Chief Executive Officer. Dr. Galakatos is Chairman of the Board of Directors of Entasis Therapeutics, a clinical stage biopharmaceutical company, and has been the Lead Director at Affymax Inc., and a Director of Portola Pharmaceuticals, Inc., and Aveo Pharmaceuticals, Inc. Dr. Galakatos received a B.A. degree in Chemistry from Reed College, a Ph.D. degree in Organic Chemistry from the Massachusetts Institute of Technology, and performed postdoctoral studies in molecular biology at Harvard Medical School. We believe that Dr. Galakatos is qualified to serve as a director of NanoString because of his operating experience in the biopharmaceutical industry and his extensive experience as a venture capital investor and a director of several public companies. Dr. Galakatos's investment focus on life sciences companies also provides substantial expertise in our industry.

Robert M. Hershberg, M.D., Ph.D. has served as a member of the board of directors and as a member of the nominating and corporate governance committee since March 2015. Since March 2017, Dr. Hershberg has served as Executive Vice President of Business Development and Global Alliances of Celgene Corporation, a publicly-traded biopharmaceutical company, where he is a member of the Executive Committee and is responsible for all business development related activities across the company and management of business alliances. From January 2016 to March 2017, Dr. Hershberg served as the Chief Scientific Officer, where he was responsible for overseeing Celgene's scientific platforms, discovery capabilities and early clinical development, and from July 2014 to January 2016, he served as Senior Vice-President of Immuno-Oncology at Celgene, where he led Celgene's research and early development efforts across its immuno-oncology portfolio. From 2011 to 2017, Dr. Hershberg was President and Chief Executive Officer of VentiRx Pharmaceuticals, a clinical stage biopharmaceutical company, which he co-founded in 2006; from 2006 to 2011 he also served as its Executive Vice President and Chief Medical Officer. Prior to co-founding VentiRx, Dr. Hershberg served as Senior Vice President and Chief Medical Officer at Dendreon

Corporation, a biotechnology company, where he led the clinical, regulatory and biometrics groups, focusing on the development of Provenge® in metastatic prostate cancer. From 2001 to 2003, Dr. Hershberg was the Vice President of Medical Genetics at Corixa, a pharmaceutical company (acquired by GlaxoSmithKline in 2005). Earlier in his career, Dr. Hershberg served as an Assistant Professor at Harvard Medical School and an Associate Physician at the Brigham and Women's Hospital in Boston, Massachusetts. Dr. Hershberg holds clinical and research faculty positions at the University of Washington School of Medicine and is a member of the board of directors of Adaptive Biotechnologies Corp., a clinical stage biotechnology company. He completed his undergraduate degree in molecular biology and M.D. at UCLA, and his Ph.D. in biology at the Salk Institute. We believe Dr. Hershberg is qualified to serve as a director of NanoString because of his extensive experience as a senior executive officer at multiple biotechnology companies.

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Kirk D. Malloy, Ph.D. has served as a member of the board of directors since September 2016 and as a member of the compensation committee since May 2017. Dr. Malloy served as Chief Executive Officer of Verogen, Inc., from August 2017 to August 2018 after founding the company and securing initial funding. Dr. Malloy is currently founder and principal at BioAdvisors, LLC, where he provides strategic consulting services to life science, diagnostics, and genomics companies. Prior to founding BioAdvisors in April 2016, he was at Illumina, Inc. from 2002 to 2016, most recently as Senior Vice President and General Manager of Life Sciences and Applied Markets from January 2014 to April 2016. From May 2005 to December 2013 he served as Vice President of Global Customer Solutions; he was also Vice President of Global Quality from December 2005 to May 2007. Dr. Malloy joined Illumina in 2002 as Senior Director of Global Customer Solutions. Before Illumina, he held various commercial leadership positions at Biosite Diagnostics and QIAGEN Inc. Dr. Malloy currently serves as Lead Independent Director for Organovo, a publicly-traded company that designs and creates functional, three-dimensional human tissues for use in medical research and therapeutic applications. He also serves as a director for several private genomics tools companies. Dr. Malloy earned his B.S. in Biology from the University of Miami, and his M.S. and Ph.D. from the University of Delaware and held post-doctoral and instructor positions at Boston University and Northeastern University. We believe Dr. Malloy is qualified to serve as a director of NanoString because of his extensive experience with more than 20 years of commercial leadership in life science tools, applied markets, and molecular diagnostics.

Gregory Norden has served as a member of the board of directors and as chairman of the audit committee since July 2012 and as a member of the compensation committee since April 2015. From 1989 to 2010, Mr. Norden held various senior positions with Wyeth/American Home Products, most recently as Wyeth's Senior Vice President and Chief Financial Officer. Prior to this role, Mr. Norden was Executive Vice President and Chief Financial Officer of Wyeth Pharmaceuticals. Prior to his affiliation with Wyeth, Mr. Norden served as Audit Manager at Arthur Andersen & Company. Mr. Norden also serves on the boards of directors of Royalty Pharma, the industry leader in the acquisition of revenue-producing intellectual property, Univision, the leading media company serving Hispanic America, Zoetis, the leading animal health company and Entasis Therapeutics, a clinical stage biopharmaceutical company. Mr. Norden is a former director of Welch Allyn (acquired by Hill-Rom in 2015), Lumara Health (acquired by AMAG Pharmaceuticals in 2014), and Human Genome Sciences (acquired by GlaxoSmithKline in 2012). Mr. Norden received a M.S. in Accounting from Long Island University - C.W. Post and a B.S. in Management/Economics from the State University of New York - Plattsburgh. We believe that Mr. Norden's qualifications to serve on the board of directors include his extensive financial and accounting expertise and experience at Wyeth and at Arthur Andersen & Company and his significant experience in the biopharmaceutical industry.

Charles P. Waite has served as a member of the board of directors since July 2004, as a member of the audit committee and nominating and corporate governance committee since June 2009, and as a member of the compensation committee from June 2009 to April 2017; he currently serves as chairman of the nominating and corporate governance committee. He has been a General Partner of OVP Venture Partners II and a Vice President of Northwest Venture Services Corp. since 1987, a General Partner of OVP Venture Partners III since 1994, a General Partner of OVP Venture Partners IV since 1997, a General Partner of OVP Venture Partners V since 2000, a General Partner of OVP Venture Partners VI since 2001, and a General Partner of OVP Venture Partners VII since 2007, all of which are venture capital firms. Prior to joining OVP, Mr. Waite was a General Partner at Hambrecht & Quist Venture Partners from 1984 to 1988, where he focused on investments in information technology and life sciences. He is a former director of Complete Genomics, a publicly-traded DNA sequencing platform developer (acquired by BGI-Shenzen in March 2013), and currently serves on the board of directors of eight private companies. Mr. Waite received an A.B. in history from Kenyon College and an M.B.A. from Harvard University. We believe that Mr. Waite's significant operational and leadership experience as a venture capital investor who sits on a number of boards qualify him to serve as a director. Mr. Waite's investment focus on life sciences companies also provides substantial expertise in our industry.

Leadership Structure

Mr. Young serves as the Chairman of the Board, and Mr. Gray serves as President and Chief Executive Officer of the Company. The roles of Chief Executive Officer and Chairman of the Board are currently separated in recognition of the differences between the two roles. We believe that it is in the best interests of our stockholders for the Board to

make a determination regarding the separation or combination of these roles each time it elects a new Chairman or appoints a Chief Executive Officer, based on the relevant facts and circumstances applicable at such time. In June 2010, when Mr. Gray was first appointed President and Chief Executive Officer, the Board determined it was in the best interests of the Company to continue to maintain an independent Chairman to allow Mr. Gray to focus on his primary responsibility for the operational leadership and strategic direction of the Company.

Audit Committee of the Board

The current members of our audit committee are Messrs. Norden, Waite and Young, and Ms. Finney. Mr. Norden is chairman of the audit committee. The composition of our audit committee meets the requirements for independence under current NASDAQ Stock Market listing standards and SEC rules and regulations. Each member of our audit committee meets

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the financial literacy requirements of the NASDAQ Stock Market listing standards. Our board of directors has determined that each of Mr. Norden and Ms. Finney are audit committee financial experts, as that term is defined under the SEC rules implementing Section 407 of the Sarbanes-Oxley Act of 2002, and possesses financial sophistication, as defined under the rules of The NASDAQ Stock Market. The audit committee operates under a written charter that was adopted by our board of directors and satisfies the applicable rules of the SEC and the listing standards of the Nasdaq Stock Market. A copy of the charter is available on our website at http://investors.nanostring.com/corporate-governance.

Our audit committee oversees our corporate accounting and financial reporting process and assists the board of directors in monitoring our financial systems. Our audit committee will also:

- approve the hiring, discharging and compensation of our independent auditors;
- oversee the work of our independent auditors;
- approve engagements of the independent auditors to render any audit or permissible non-audit services;
- review the qualifications, independence and performance of the independent auditors;
- review financial statements, critical accounting policies and estimates;
- review the adequacy and effectiveness of our internal controls; and review and discuss with management and the independent auditors the results of our annual audit, our quarterly financial statements and our publicly filed reports.

Information Concerning Our Executive Officers

The following table sets forth the name, age and certain background information about each of our current executive officers as of March 11, 2019 who do not also serve on our Board of Directors. Officers are elected by the board of directors to hold office until their successors are elected and qualified.

Name	Age	Position
K. Thomas Bailey	50	Chief Financial Officer
Mary Tedd Allen, Ph.D.	56	Senior Vice President, Operations
Joseph M. Beechem, Ph.D.	61	Senior Vice President, Research and Development
J. Chad Brown	61	Senior Vice President, Sales and Marketing
David W. Ghesquiere	52	Senior Vice President, Corporate & Business Development

K. Thomas Bailey has served as Chief Financial Officer since January 2018. Prior to joining our company, Mr. Bailey was Chief Financial Officer at AgaMatrix Holdings LLC, a developer, manufacturer and marketer of medical technologies for diabetes care, from March 2014 to January 2018. Prior to joining AgaMatrix, Mr. Bailey served as Chief Executive Officer of Angiotech Pharmaceuticals, a developer, manufacturer and marketer of local drug, drug delivery and medical device technologies, from October 2011 to October 2013, and served as Angiotech's Chief Financial Officer from December 2005 to October 2011. During his time as CFO of Angiotech, Mr. Bailey directed a restructuring of Angiotech's debt obligations pursuant to the Canadian Creditors Arrangement Act in 2011, with recognition of the restructuring pursuant to Chapter 15 under U.S. law. Mr. Bailey also serves as a Director of AgaMatrix Holdings, SCP Interventional Radiology LLC and The Homestretch Foundation, and previously served as a Director of Angiotech Pharmaceuticals, LifeCare Management Services and OncoGenex Inc. Previously, Mr. Bailey served as a Director in the health care investment banking group at Credit Suisse First Boston and Donaldson, Lufkin & Jenrette. Mr. Bailey received an A.B. in economics from Harvard University in 1990 and an M.B.A. from Harvard Business School in 1995.

Mary Tedd Allen, Ph.D. has served as Senior Vice President, Operations since May 2017, and previously served as our Vice President of Operations from February 2016 to May 2017, and as our Vice President of Manufacturing from March 2007 to February 2016. Prior to joining our company, Dr. Allen served as the Director of Research and Programs at the Washington Technology Center, Washington state's non-profit technology-based economic development enterprise, from February 2006 to February 2007. Before joining the Washington Technology Center, Dr. Allen was Vice President of the Advanced Manufacturing and Development group at Applied Biosystems, a publicly-traded biotechnology company acquired by Invitrogen in November 2008 to form Life Technologies, from February 2002 to August 2005. Dr. Allen has more than 20 years of experience managing product development and

manufacturing groups for both semiconductor and biotech applications. She received a B.A. in Chemistry from Mount Holyoke College and a Ph.D. in Chemistry from the University of Rochester.

Joseph M. Beechem, Ph.D. has served as Senior Vice President of Research and Development since April 2012. Prior to joining our company, Dr. Beechem held various positions at Life Technologies, a publicly-traded biotechnology tools company, most recently as Vice President, Head of Advanced Sequencing and Head of Global Sequencing Chemistry,

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Biochemistry and Biophysics from January 2010 to April 2012. From December 2007 to December 2012, he served as Chief Technology Officer of Life Technologies. During his career at Life Technologies, he led the design and development of multiple genetic analysis technologies, the latest advanced SOLiD sequencing technology and the single molecule nano-DNA sequencing technology. Prior to joining Life Technologies, Dr. Beechem was Chief Scientific Officer at Invitrogen, a publicly-traded biotechnology company that acquired Applied Biosystems in November 2008 to form Life Technologies, from August 2003 to December 2007 and Director of Biosciences at Molecular Probes, a biotechnology company acquired by Invitrogen in 2003, from August 2000 to August 2003. Prior to his industry experience, Dr. Beechem led an NIH-funded research laboratory for 11 years as a tenured associate professor at Vanderbilt University. He has authored or co-authored more than 100 peer-reviewed papers in diverse fields such as biomathematics, physics, chemistry, physiology, spectroscopy, diagnostics and biology. Dr. Beechem is also named on nearly 40 U.S. patents or patent applications and has served on a number of editorial and scientific advisory boards. He received a B.S. in Chemistry and Biology from Northern Kentucky University and a Ph.D. in Biophysics from The Johns Hopkins University.

J. Chad Brown has served as Senior Vice President, Sales and Marketing since July 2017. Prior to joining our company, Mr. Brown served as the President and Head of Commercial Operations for North America for Qiagen N.V. from August 2015 to March 2016. From July 2007 until August 2015, Mr. Brown held a series of commercial leadership positions at Roche Diagnostics Corporation in the Applied Sciences and Centralized Diagnostics divisions, including as VP of Marketing and VP of Sales for Centralized Diagnostics and as the National Director of Sales for Genomic Systems. Previously, he held a series of sales leadership positions in medical device and healthcare companies, including Rotech Healthcare from March 2003 to December 2005, Apria Healthcare Group from January 1998 to March 2003, Chiron Diagnostics from January 1990 to January 1998, and Humana from January 1981 to January 1990. Mr. Brown earned his BS degree in Health Services Administration from the University of Kentucky.

David W. Ghesquiere has served as Senior Vice President, Corporate & Business Development since November 2013. Prior to joining our company, Mr. Ghesquiere was the founder and managing director of Adrenaline Venture & Advisory LLC, an international advisory firm, from August 2012 to November 2013. Prior to founding Adrenaline Venture & Advisory, Mr. Ghesquiere served as Senior Vice President, Corporate & Business Development at Dendreon Corporation, a biotechnology company, from 2011 to 2012. From 2005 to 2010, Mr. Ghesquiere held a variety of executive positions at OSI Pharmaceuticals, acquired by Astellas Pharma in 2010, including Senior Vice-President of Corporate & Business Development and Managing Director of OSI Investment Holdings GmbH and OSI Investment Management GmbH, OSI's wholly owned, Switzerland-based subsidiaries, where he played a key role in establishing OSI's venture capital arm. Earlier in his career, Mr. Ghesquiere served as Director of Global Business Development for Aventis Pharmaceuticals, which merged with Sanofi in 2004, and worked in product marketing at Johnson & Johnson. Mr. Ghesquiere received an M.B.A. from The University of Western Ontario's Ivey School of Business and a B.A. in economics from The University of Western Ontario.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires our directors and executive officers, and persons who own more than ten percent of a registered class of our equity securities, to file reports of ownership of, and transactions in, our securities with the SEC and NASDAQ. Such directors, executive officers, and ten percent stockholders are also required to furnish us with copies of all Section 16(a) forms that they file.

Based solely on a review of the copies of such forms received by us, or written representations from certain reporting persons, we believe that during 2018, our directors, executive officers, and 10% stockholders complied with all Section 16(a) filing requirements applicable to them.

Corporate Governance Principles and Code of Business Conduct and Code of Ethics

Our board of directors has adopted Corporate Governance Principles. These principles address, among other items, the responsibilities of our directors, the structure and composition of our board of directors and corporate governance policies and standards applicable to us in general. In addition, our board of directors has adopted a Code of Business Conduct that applies to all of our employees, officers and directors, including our Chief Executive Officer, Chief Financial Officer, and other executive and senior financial officers. The board of directors also has adopted a Code of Ethics that applies to our Chief Executive Officer, Chief Financial Officer and other senior financial officers. The full

text of our Corporate Governance Principles, Code of Business Conduct and Code of Ethics is posted on the Corporate Governance portion of our website at http://investors.nanostring.com/corporate-governance. We will post amendments to our Corporate Governance Principles, Code of Business Conduct and Code of Ethics or waivers of the same for directors and executive officers on the same website.

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Compensation of Non-Employee Directors

Compensation Policy

The compensation committee retained Arnosti Consulting, Inc., or Arnosti Consulting, an independent compensation advisory firm, to provide recommendations to the nominating and corporate governance committee, or the NCG committee, on non-employee director compensation. Arnosti Consulting provided us with competitive data, analysis and recommendations regarding any appropriate updates to the non-employee director compensation policy previously in place. For purposes of the policy, each director is classified into one of the two following categories: (1) an "employee director," is a director who is employed by us; and (2) a "non-employee director," is a director who is not an employee director. Only non-employee directors receive compensation under the director compensation policy, which is provided in the form of equity and cash, as described below.

For 2018, both the cash component and the equity component remained in effect at 2017 levels. We believe our non-employee director compensation program provides reasonable compensation to our non-employee directors that is appropriately aligned with our peers and is commensurate with the services and contributions of our non-employee directors. All directors will be reimbursed for expenses in their capacities as directors in accordance with our standard expense reimbursement policy. Dr. Galakatos is a senior managing director of Blackstone, which is a stockholder of our company through certain of its affiliated entities, and as a result of the internal policies of Blackstone, Dr. Galakatos is required to hold or remit any compensation received for his service on our board of directors for the benefit of Clarus Ventures or its affiliates.

Equity Compensation

Under the policy, upon joining our board of directors, each non-employee director receives an option to purchase 0.08% of our outstanding shares on the date of grant. This remains unchanged from the equity grant levels applicable to new non-employee directors under the policy as in effect in 2016 and 2017. The exercise price of the initial grant is the fair market value, as determined in accordance with our 2013 Equity Incentive Plan, on the date of the grant. The shares underlying the initial grant vest as to 50% of the total shares subject to such award on the one year anniversary of the date the director commenced services, and the remaining 50% of the total shares vest in 12 equal monthly installments thereafter, in each case, subject to continued service as a director through each vesting date.

Pursuant to the policy, at the beginning of each fiscal year, each non-employee director is granted an option to purchase 0.04% of our outstanding shares on the date of grant. The exercise price of this annual grant is the fair market value, as determined in accordance with our 2013 Equity Incentive Plan, on the date of the grant. All of the shares underlying the annual grant vest on the one year anniversary of the date of grant, subject to continued service as a director through the vesting date.

The vesting of each grant described above accelerates in full in connection with a "change in control" as defined in our 2013 Equity Incentive Plan, if the service of an outside director is terminated on or following a change in control, other than pursuant to a voluntary resignation of the director that is not at the request of the acquirer. Awards granted under the outside director compensation policy are granted pursuant to, and subject to the other terms and conditions of, our 2013 Equity Incentive Plan. Our 2013 Equity Incentive Plan provides that no non-employee director may be granted, in any fiscal year, stock-settled equity awards with a grant date fair value (determined in accordance with GAAP) of more than $500,000, with this limit increased to $1,000,000 in connection with his or her initial service, or cash-settled awards with a grant date fair value of more than $175,000, increased to $350,000 in connection with his or her initial service.

Cash Compensation

For 2018, each non-employee director receives an annual cash retainer of $40,000 for serving on the board of directors, which we believe aligned with market practices and provided our non-employee directors with reasonable compensation commensurate with their service. In addition to the annual retainer, the chairperson of the board of directors received an additional cash retainer of $40,000 for 2018, and the chairpersons of the board's audit committee, compensation committee and nominating and corporate governance committee were entitled to an additional cash retainer of $18,000, $12,000 and $10,000 per year, respectively. Non-chairperson members of the audit committee, compensation committee and nominating and corporate governance committee were entitled to an additional cash retainer of $7,500, $6,000 and $5,000 per year, respectively. As noted, the amount of the retainers remained the same

as in 2017. All cash payments are payable in four equal installments at the end of each calendar quarter during which such individual served as a director (such payments to be prorated for service during a portion of such quarter).

2019 Changes to Director Compensation Policy

In December 2018, the NCG committee retained Radford, an independent compensation consultant, to replace Arnosti Consulting based on Radford's status as the leading provider of compensation intelligence and consulting services to companies in the life sciences and technology sectors. That same month, the board suspended the annual non-employee director grants that

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were scheduled to be issued on January 1, 2019, in order to allow for the completion of Radford's review of the director compensation policy and the implementation of any resulting equity compensation changes.

Radford conducted an extensive review of our director compensation policies and practices and conducted an extensive market analysis. Radford confirmed that director cash compensation generally is competitive to the market, although compensation to the chairs of our audit and compensation committees slightly lagged that provided by our peers. Based on its benchmarking of director equity, Radford reported that a number of our peer companies had begun using a blend of stock options and restricted stock units, rather than just stock options. Radford also found that the prevalent peer group practice was to use a target dollar value for setting equity awards rather than a percentage of outstanding company stock methodology. Based on these findings, and the Company’s philosophy of generally delivering equity value that falls between the 50th and 75th percentiles of peer company equity levels in order to reasonably compensate our non-employee directors for their service, the NCG committee recommended to our board of directors in January 2019 the following changes to director compensation, which were subsequently approved by the board:

- Initial equity grant of stock options for newly elected or appointed directors will be granted automatically on their start date as a non-employee director valued at $200,000 (described further below) and 1/3 of the total will vest on each anniversary of the grant date over three years, subject to continued service through each vesting date, and subject to the change in control provisions of our 2013 Equity Incentive Plan, which are described above; and
- Annual equity grants to directors will be valued at $100,000 (described below), will be split equally (by value) between stock options and restricted stock units, and will be granted on the date of the annual stockholders' meeting each year. These equity grants will vest in full on the date that is the earlier of the one-year anniversary of the grant date, or the date immediately prior to the next annual stockholders meeting, subject to continued service through the vesting date, and subject to the change in control provisions of our 2013 Equity Incentive Plan, which are described above; and
- Modest increases in the audit and compensation committee chair retainers to align with the market 50th percentile.

The number of options will be determined by dividing the dollar value of the grant by the Black Scholes value of a share and the number of restricted stock units will be determined by dividing the dollar value of the grant by the fair market value of a share, meaning the closing price of a share, of the company's common stock on the date of the grant. The exercise price of the initial and annual option grants is the fair market value, as determined in accordance with our 2013 Equity Incentive Plan, on the date of the grant.

In light of the suspension of the scheduled January 1, 2019 annual equity grants to our non-employee directors pending Radford’s review of our director compensation policy, the board intends to make an interim option grant valued at $50,000 to each director prior to the date of the annual stockholders' meeting on June 18, 2019. This grant will vest in full on the day prior to the date of the annual stockholders' meeting, June 18, 2019, subject to continued service as a director through the vesting date, and subject to the change in control provisions of our 2013 Equity Incentive Plan, which are described above. The regularly scheduled annual equity grants as described above will occur on the next day, the date of the annual stockholders' meeting, June 18, 2019.

2018 Director Compensation Table

Name	Fees Earned or paid in Cash	Option Awards[1]	Total
William D. Young[2]	$ 92,500	$ 40,355	$132,855
Elisha Finney[3]	47,500	40,355	87,855
Nicholas Galakatos, Ph.D.[4]	57,000	40,355	97,355
Robert M. Hershberg, M.D., Ph.D.[5]	45,000	40,355	85,355
Kirk D. Malloy, Ph.D.[6]	46,000	40,355	86,355
Gregory Norden[7]	64,000	40,355	104,355
Charles P. Waite[8]	57,500	40,355	97,855

(1) Represents the aggregate grant date fair value of stock option awards granted in 2018. These amounts have been computed in accordance with Financial Accounting Standards Board, or FASB, Accounting Standards

Codification, or ASC, Topic 718, without regard to estimated forfeitures. For a discussion of valuation assumptions, see the notes to our financial statements included in Item 8 of this report.

(2) As of December 31, 2018, Mr. Young held options for the purchase of 125,178 shares of common stock, of which 115,010 shares were vested as of such date.

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(3) As of December 31, 2018, Ms. Finney held options for the purchase of 27,521 shares of common stock,13,738 of which were vested as of such date.

(4) As of December 31, 2018, Dr. Galakatos held options for the purchase of 48,779 shares of common stock, of which 38,611 shares were vested as of such date.

(5) As of December 31, 2018, Dr. Hershberg held options for the purchase of 41,545 shares of common stock, of which 31,377 shares were vested as of such date.

(6) As of December 31, 2018, Dr. Malloy held options for the purchase of 34,964 shares of common stock, of which 24,796 shares were vested as of such date.

(7) As of December 31, 2018, Mr. Norden held options for the purchase of 59,185 shares of common stock, of which 49,017 shares were vested as of such date.

(8) As of December 31, 2018, Mr. Waite held options for the purchase of 48,779 shares of common stock, of which 38,611 shares were vested as of such date.

Item 11. Executive Compensation

Compensation Discussion and Analysis

We became a public company in June 2013 and have filed our proxies since then under the scaled reporting rules applicable to emerging growth companies. Beginning in 2019 we are no longer an emerging growth company and this year's Part III of Form 10-K and proxy statement relating to the 2019 meeting of stockholders now include additional details as follows:

- This Compensation Discussion and Analysis, or CD&A;
- An additional year of reporting history, and reporting on compensation for two additional Named Executive Officers, or NEOs, in our Summary Compensation Table; and
- Additional compensation disclosure tables for "Grants of Plan-Based Awards," "Option Exercises," and "Potential Change-in-Control and Severance Benefits" which are included in the "Executive Compensation" section of this annual report on Form 10-K and proxy statement relating to the 2019 meeting of stockholders.

In addition, this year's proxy statement will include:

- An advisory vote on executive compensation; and
- An advisory vote on the frequency on which we will hold our "say on pay" vote.

Our Named Executive Officers, or NEOs, for 2018 were as follows:

- R. Bradley Gray, our President and Chief Executive Officer;
- K. Thomas Bailey, our Chief Financial Officer;
- Mary Tedd Allen, our Senior Vice President of Operations;
- Joseph M. Beechem, our Senior Vice President of Research and Development; and
- David W. Ghesquiere, our Senior Vice President of Corporate and Business Development.

Executive Summary

2018 Business Highlights

During 2018, we achieved several important milestones in our business and financial plans, including the following:

- Achieved product and service revenue for fiscal year 2018 of $83.5 million (on a GAAP basis), a 16% increase over 2017 product and service revenue.
- Increased installed base to approximately 730 nCounter Analysis Systems, an increase of approximately 21% since year-end 2017.
- Shipped our first beta GeoMx DSP, our newest product offering, during the fourth quarter.
- Announced that the GeoMx Priority Site program for customers was over-subscribed, yielding pre-orders for more than 30 instruments.
- Executed an underwritten public offering of our stock in July 2018 for $53.8 million in net proceeds.
- Entered into a new term loan agreement for $100 million with Cap Royalty Group.

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- Ended 2018 with cash, cash equivalents and short-term investments of $94.0 million.

The operational achievements highlighted above resulted in a total shareholder return of approximately 100% (2x stock price increase) from the beginning to the end of 2018.

2018 Executive Compensation Highlights

During 2018, we continued to follow the executive compensation policies and procedures that we put in place in connection with becoming a public company, including:

- Emphasis on pay for performance: Our compensation committee is focused on ensuring that a significant portion of total compensation for our NEOs is performance-based. For 2018, the variable compensation awarded to our NEOs ranged from 37% to 60% of each NEO's total targeted annual compensation. For the fiscal year 2019, the compensation committee has approved the addition of performance-based stock units as a new component of the equity stock program, in addition to the time-based stock options and restricted stock units which have historically been granted.
- No guaranteed compensation: Although we have signed employment agreements with each of our NEOs, all of these agreements provide for "at will" employment, and none of these agreements provides any guarantees relating to salary increases or the amounts of incentive pay or equity awards.
- Reasonable severance and targeted change in control benefits: The employment agreements we have with our NEOs do not provide for "single trigger" benefits upon a change in control that do not require termination of employment. These employment agreements require that the NEO's employment be terminated by us without "cause" or the NEO resign for "good reason" in order for the NEO to receive severance benefits, whether in connection with a change in control or otherwise. Likewise, equity awards to these NEOs contain "double trigger" provisions in order for the vesting of these awards to accelerate in connection with a change in control.
- Independent compensation consultant: Our compensation committee engages its own independent compensation consultant, which provides the compensation committee with valuable data regarding market compensation trends and guidance to the compensation committee about executive compensation programs in general.
- No tax gross ups. We do not provide tax gross ups to any of our NEOs.
- Perquisites: We do not provide any special perquisites to any of our NEOs.
- Policy against speculative trading: Our insider trading policy prohibits our executives from engaging in "hedging" or "pledging" transactions with respect to our common stock.
- Risk analysis. We believe the structure of our executive compensation program motivates our executives to make thoughtful, appropriate decisions with measured risks balanced by appropriate rewards for the company.

Compensation Objectives and Philosophy

The objectives of our executive compensation program are as follows:

- Recruit, motivate and retain highly qualified executive officers who possess the skills and leadership necessary to sustain a high-growth business;
- Reward our executives for achieving or exceeding short-term individual and company goals that drive our growth;
- Provide long-term retention and incentives to our executives that align their interests with the long-term interests of our company and our stockholders, thereby incentivizing management to increase stockholder value; and
- Provide compensation packages that are competitive, reasonable and fair relative to peers and the overall market.

Processes and Procedures for Compensation Decisions

The Compensation Committee's Process and the Role of the CEO

Our compensation committee is responsible for the executive compensation programs for our executive officers and reports to our board of directors on its discussions, decisions and other actions. In carrying out these responsibilities, our compensation committee reviews and approves the compensation for our NEOs, including developing the appropriate corporate goals and objectives for these executives and assessing performance against these goals and objectives. The compensation committee also provides oversight of the Company's overall compensation policies, plans and benefit programs, and overall compensation philosophy.

At the beginning of each year, the compensation committee meets and approves strategic, operational and financial objectives for the company, or the Corporate Goals, for the upcoming year. The Corporate Goals are developed by Mr. Gray, the NEOs and the other members of the executive team and Mr. Gray presents them to the committee for

approval. Each NEO

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also proposes his or her own individual goals for the applicable year, in consultation with Mr. Gray, which are primarily comprised of subsets of the Corporate Goals for which each NEO is primarily responsible. These individual goals are also factored into the final assessment of each NEO's performance for that year. Shortly after the end of the year, the compensation committee evaluates the performance of our NEOs against the previous year's Corporate Goals and individual goals. The level of achievement of the Corporate Goals and individual goals are considered, along with input from Mr. Gray, and our VP of Human Resources, in determining payments to be made under the company's incentive compensation program for the completed year.

As part of the annual executive compensation setting process, Mr. Gray (with the support of our VP of Human Resources) makes recommendations to our compensation committee regarding short- and long-term compensation for all NEOs (other than himself) based on corporate and individual performance, and market trends. Our compensation committee then reviews the recommendations, as well as the input and data from the compensation committee's independent compensation consultant, and makes decisions as to total compensation, as well as each individual compensation component, for each of these NEOs. No NEO participates in portions of any meetings during which decision are made regarding his or her own compensation.

With respect to the compensation for Mr. Gray, the compensation committee consults with our VP of Human Resources, as well as the independent compensation consultant, and reviews the data provided by the consultant, to make decisions regarding Mr. Gray's performance, individual components of his compensation and total compensation. Mr. Gray does not participate in the portions of any meeting during which decisions are made regarding his compensation.

Role of the Compensation Consultant and Use of a Peer Group

The compensation committee is authorized to retain the services of one or more executive compensation consultants, in connection with the establishment of our compensation programs and related policies. From 2012 to October 2018, Arnosti Consulting, Inc. served as the compensation committee's compensation consultant, to provide it with information, recommendations and other advice relating to executive compensation on an ongoing basis. In late 2018, the compensation committee selected Radford as its compensation consultant to replace Arnosti Consulting.

At the beginning of 2018, Arnosti Consulting assisted us in developing a group of peer companies to help us determine the appropriate level of overall compensation for our NEOs and other executive officers, as well as assess each separate element of compensation, with a goal of ensuring that the compensation we offer to our NEOs and other executive officers is competitive and fair. For fiscal year 2018, our peer group for compensation decisions consisted of the following companies in the biotechnology or life sciences tools and services industries, each of which had less than $510 million in commercial product revenue and market capitalizations (30-day average as of January 11, 2019) ranging from $150 million to $2.4 billion:

Accelerate Diagnostics, Inc.	OraSure Technologies, Inc.
Fluidigm Corp.	Oxford Immunotec Global Plc
GenMark Diagnostics, Inc.	Pacific Biosciences of California, Inc.
Genomic Health, Inc.	Quidel Corp.
Luminex Corp.	T2 Biosystems, Inc.
Meridian Bioscience, Inc.	Veracyte, Inc.
Natera, Inc.	

In addition to the peer group data, Arnosti Consulting also provided the compensation committee with data from Radford compensation studies for companies in the life sciences and biotechnology industries for positions that are comparable to those of our NEOs and other members of our executive team. Our compensation committee finds comparative data from our peer group and the Radford data to be useful in setting and adjusting executive compensation, and uses it primarily to ensure that our executive compensation program and its constituent elements are and remain competitive in relation to our peers. The compensation committee has not adopted any formal benchmarking guidelines and retains the discretion to set levels of executive compensation above or below peer levels. The compensation committee looks to factors such as individual performance and contribution to the company, the need to retain particular talent, the retention risk for an executive, an executive's level of experience and responsibilities and comparability of roles within other peer companies.

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Elements and Analysis of Named Executive Officer Compensation

The compensation program for our NEOs consists of:

- base salary;
- annual cash incentive compensation;
- long-term equity incentive awards; and
- severance and change in control-related benefits.

Our NEOs are also eligible to participate in the employee benefit programs that we make available to all full time employees, including medical and dental coverage, life and disability insurance, flexible spending accounts, a 401(k) plan and an employee stock purchase plan. The NEOs' participation in these programs is on the same terms and conditions as those offered to our other full time employees.

Base Salaries

We provide base salaries to our NEOs to compensate them for services rendered on a day-to-day basis. Each NEO's base salary is typically set based on competitive market considerations and his or her level, responsibilities, experience, and skill set. Historically, we have not applied specific formulas to determine changes in base salary. Rather, the base salaries of our NEOs (other than our CEO) have been reviewed on an annual basis by our CEO and our compensation committee based on their experience with respect to setting salary levels, supplemented by market data provided by the compensation committee's independent compensation consultant and assessments of the performance of the NEOs. The base salary of our CEO is reviewed by the compensation committee annually based on the same factors and inputs.

In setting NEO base salaries for 2018, our compensation committee reviewed the peer group data provided by Arnosti Consulting as well as performance achievement against the 2017 corporate and individual goals. The compensation committee did not review Mr. Bailey's salary as he had joined the company in January 2018. Based on the peer company data and Radford data, the compensation committee found that the base salaries for our NEOs were within the competitive range of the 50th to 60th percentile. Based on that information and the company performance of 50% of achievement of the 2017 Corporate Goals, the compensation committee chose not to make any changes to NEO base salaries for 2018 from 2017 levels.

Name	2018 Base Salary
R. Bradley Gray	$565,000
K. Thomas Bailey	400,000
Mary Tedd Allen	320,000
Joseph M. Beechem	385,000
David W. Ghesquiere	375,000

Annual Cash Incentive Compensation

Our incentive compensation plan provides our NEOs with annual cash incentive awards based on our achievement of our Corporate Goals and individual goal achievement. For each NEO, the target bonus opportunity is determined as a percentage of his or her base salary (as indicated in the table below), which was established for 2018 by the compensation committee in consultation with Arnosti Consulting, based on peer group data, historical performance and internal equity considerations.

We established our annual incentive compensation program in order to motivate our executives to achieve short-term financial and business objectives, reflecting our "pay for performance" culture and resulting in a significant portion of NEO compensation tying directly to their individual and Company achievements. The program also helps us to remain competitive with our peer companies, which generally offer an annual incentive opportunity as a standard element of compensation. 2018 annual cash incentives will be paid in the first quarter of 2019 based on 2018 performance.

At the beginning of 2018, the compensation committee met and approved the Corporate Goals for 2018. These Corporate Goals were developed and proposed to the compensation committee by Mr. Gray, the NEOs and the other members of the executive team. Each Corporate Goal was assigned a percentage weighting toward the overall Corporate Goal component of the NEO's annual incentive, as shown in the table below. Each member of the executive

team also developed and proposed his or her own individual goals for 2018, in consultation with Mr. Gray. The Corporate Goals and individual goals were set at levels intended to be challenging but attainable with one or two "stretch" goals that would be harder to achieve. For example, the product and service revenue Corporate Goal was considered a "stretch" goal as it would require double digit product and service revenue growth over 2017 performance. The compensation committee considered the appropriateness and level of challenge attached to the proposed goals, and approved them as presented. Each NEO's annual incentive award for

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2018 was based on his or her achievement against the Corporate Goals and his or her individual goal, with these components weighted for each NEO as follows: Mr. Gray, 100% Corporate Goals; Mr. Bailey, 75% Corporate Goals/25% individual goals; Dr. Allen, 75% Corporate Goals/25% individual goals, Dr. Beechem, 75% Corporate Goal/25% individual goals, and Mr. Ghesquiere, 75% Corporate Goals/25% individual goals. The Corporate Goals were weighted very heavily for each NEO (and, in Mr. Gray's case, comprised the entirety of his annual incentive award opportunity), because our NEOs are in the position to influence and drive overall Company performance and stockholder value, and therefore the compensation committee believed it appropriate that most of their annual incentive be awarded on this basis.

At the beginning of 2019, the compensation committee reviewed the performance of our NEOs against the 2018 Corporate Goals and based on the significant advances we made against those goals, along with the overachievement on some goals, determined the overall Corporate Goal achievement at 129.5%, which the compensation committee rounded to achievement of 130%. In particular, the committee recognized the company's success in achieving double digit growth for product and service revenue in each quarter of 2018.

Corporate Goal Attainment (Revenue and gross margin in this chart are on a GAAP basis)

Goal	Explanation	Weighting (%)	Attainment Percentage/Evaluation of Performance	Resulting Incentive Weight (%)
Return Core Business to Compelling Growth	Grow product and service revenue to $85.8 million for 2018 and increase product and service revenue each quarter by at least 10% year over year	35%	110%: Achieved $83.5 million in product and service revenue; exceeded 10% growth in product and service revenue in all quarters, with substantial overachievement in two of the four quarters	39%
Extend Leadership in Oncology Research & Diagnostics	Deliver specified revenue amounts for oncology panels and Prosigna; launch new panels; advance development of LymphMark assay; enter into a companion diagnostic partnership with a biopharma company; and publish immuno-oncology papers from academic collaborations	15%	100%: Oncology product and service revenue goals exceeded; new Breast Cancer 360 and Car-T panels launched; LymphMark studies progressed; four immuno-oncology publications; biopharma partnership signed but not for a companion diagnostic	15%
Drive nCounter into New Therapeutic Areas and Applications	Launch new neuro-inflammation and autoimmune profiling panels and achieve revenue goals for those panels and systems	10%	90%: significant growth in non-oncology instrument and consumables sales; new neuro-inflammation and autoimmune panels launched	9%
Launch Digital Spatial Profiling (DSP) System under Early Access	Place DSP beta systems and achieve a certain amount of revenue in DSP early access sales prior to commercial launch in 2019	15%	200%: beta system placement and presales substantially exceeded expectations	30%
Advance Hyb & Seq Toward 2020 Commercial Launch	Develop prototype systems and complete sequencing chemistry	10%	70%: Technical achievements reached but full commercial launch delayed until 2021	7%
		15%		30%

Rebuild Trust with Investors	Meet or exceed investor growth expectations in each quarter; deliver gross margin of 57%; secure financing to end the year with access to adequate cash to fund growth		200%: exceeded investor growth expectations in each quarter; achieved 57% gross margin; follow on equity offering completed and new term loan facility in place; ended the year with $94.0 million in cash and cash equivalents	
		100%		130%

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In addition, the compensation committee reviewed the performance of each NEO against the individual goals of each NEO set at the beginning of 2018 and determined each NEO's achievement as follows:

Individual Goal Attainment (Revenue and gross margin in this chart are on a GAAP basis)

Named Executive Officer	Individual Goals	Attainment Percentage	Weighting as a % of Total Bonus
R. Bradley Gray	None	n/a	—%
K. Thomas Bailey	Financing; investor relations; year-end cash; Finance process improvements; gross margin of 57%	150%	25%
Mary Tedd Allen	Activities to support revenue growth; gross margin of 57%; supplier management; quality system to support regulatory submissions for companion diagnostics; ISO recertification; improvements in shipment and service response times	90%	25%
Joseph M. Beechem	Specified progress in product development for GeoMx Digital Spatial Profiler, Hyb & Seq and panels	90%	25%
David Ghesquiere	Execute collaborations and partnerships relating to companion diagnostics, GeoMx and Hyb and Seq	80%	25%

Based on the level of achievement of the Corporate Goals and individual goals and the weighting of such goals for each NEO, the compensation committee then approved payment of the bonuses as follows:

			Corporate Bonus			Individual Bonus			Total Bonus		
Named Executive Officer	2018 Base Salary	Target as a % of salary	Weight	Attain.	Value	Weight	Attain.	Value	Actual	Target	Percent
R. Bradley Gray	$565,000	85 %	100%	130 %	$624,325	—%	n/a	n/a	$624,325	$480,250	130 %
K. Thomas Bailey	400,000	50 %	75 %	130 %	195,000	25%	150 %	$75,000	270,000	200,000	135 %
Mary Tedd Allen	320,000	45 %	75 %	130 %	140,400	25%	90 %	32,400	172,800	144,000	120 %
Joseph M. Beechem	385,000	50 %	75 %	130 %	187,688	25%	90 %	43,312	231,000	192,500	120 %
David Ghesquiere	375,000	50 %	75 %	130 %	182,813	25%	80 %	37,500	220,313	187,500	118 %

Long Term Equity Incentive Awards

We have established a long-term equity incentive program to motivate our NEOs to increase stockholder value, and to achieve long-term corporate objectives. We feel strongly that granting stock-based awards to our executives promotes alignment of their interests with those of stockholders by allowing them to participate in, and rewarding them for, long-term appreciation of our stock. The compensation committee also considers the vesting conditions on these awards to serve an important retention function for our NEOs. In addition, our compensation committee believes that this program is necessary to be and remain competitive with our peer companies and in the industries in which we compete for talent. Equity grants are made in connection with the hiring of an NEO, and also typically are awarded on an annual basis in the first quarter of each fiscal year.

From the founding of the company until 2015, we granted only stock options to employees with the exercise price set as the fair market value on the date of grant and vesting 25% on the first anniversary of the grant date, following by monthly vesting in equal increments over the following three years, generally with "double trigger" acceleration of vesting provisions for our NEOs and certain other executives described below. In 2016, we introduced restricted stock units, or RSUs, into our executive compensation program and since then, our annual NEO and other executive equity grants have included a combination of stock options and RSUs. The compensation committee decided to make this change based on its assessment of the market practice survey data provided by Arnosti Consulting, which showed that

companies in our peer group typically moved toward inclusion of RSUs in order to provide a more predictable return in a volatile stock market than stock options. From a company dilution perspective, the committee recognized that RSUs reduce dilution as fewer shares are required to deliver an equivalent value as under a stock option. In 2019, the compensation committee expanded the granting of RSUs to all

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employees annually, though stock options still comprise all or a portion of the initial equity grants provided upon hire for employees. The strong retention that RSUs provide, combined with the incentives to drive long-term stockholder value that options provide, together create a balanced approach intended to meet the Company's pay-for-performance objectives and retention needs, while helping to manage dilution.

The vesting schedule for these RSUs are typically 1/3 of the total on the anniversary of the vesting commencement date over three years, subject to continued service, generally with the "double trigger" acceleration of vesting provisions for our NEOs and certain other executives described below. As part of the negotiated terms of his employment with the Company, Mr. Bailey's new hire RSU award is scheduled to vest in full on the second anniversary of his start date, rather than under our typical three-year schedule.

Generally, the stock options and RSUs granted to our NEOs and certain other executives include "double trigger" acceleration protection, under which the award vests in full upon a termination without cause or resignation for good reason that occurs following a change in control. The compensation committee provides this "double trigger" involuntary termination protection because it recognizes that the possibility of a change in control could be distracting for NEOs, and result in uncertainty about their future employment with the Company after a transaction. The acceleration features the Company provides allow our executives to focus on making decisions regarding a change in control that are in the best interests of our stockholders, despite any personal employment uncertainties. With respect to Mr. Bailey's new hire stock options and RSUs, in order to receive this acceleration of vesting, his termination without cause or for good reason must occur within 12 months following a change in control. This 12-month time limit is consistent with the time limits we have historically provided for the typically larger new hire equity awards.

The value of stock options and RSUs awarded to each NEO is determined based on the compensation committee's assessment of a number of factors, including the role and responsibility of each NEO, external market data, the performance of the NEO and the expected contribution of the NEO to future results. The compensation committee also reviews the value of the NEO's equity holdings and previously granted equity awards in determining these awards, and may increase or decrease future awards based on these other holdings.

In 2018, the compensation committee approved equity grants for NEOs at the same level and in the same mix of options and RSUs as had been granted in 2017, taking account of the need to maintain competitive compensation levels with our peer group and retain the talent critical to our success.

In January 2018, our CEO also proposed that the compensation committee consider issuing additional RSUs in light of heightened retention concerns. After reviewing executives' current vested and unvested options and RSUs, and receiving advice from Arnosti Consulting, the compensation committee's independent compensation consultant, the compensation committee recognized that a substantial portion of our NEOs' equity, composed primarily of stock options, were underwater and that their "in the money" option holdings were at minimal levels and did not serve the purpose of incentivizing retention of these NEOs. In addition, the overall value of their equity holdings at that time were also quite modest as compared to the holdings of similarly situated executives in our peer group. Finally, the compensation committee also recognized that the company's stock had dropped significantly as a result of the company's performance in 2017, which could result in the departure of executives at a time when it was particularly critical for us to retain our leadership. For all of these reasons, the compensation committee determined that there were unusual and heightened retention risks, and that it was crucial to retain and motivate key talent during what was an uncertain period. As a result, in March 2018, the compensation committee approved RSUs awards to our NEOs, or the Retention RSUs. These Retention RSUs were equal in value to each NEO's 2018 salary (other than Mr. Gray's Retention RSU grant which was equal in value to approximately two times his 2018 salary) and have the same vesting schedule and acceleration provisions as the annual RSUs described above.

The equity awards granted to our NEOs for 2018 are as set forth in the table below. Mr. Bailey's stock option and RSU awards were granted by the compensation committee following the commencement of his employment in January 2018. As is typical for new hire awards, Mr. Bailey's stock option grant and RSU grant were higher than most other NEOs given that they were granted in connection with his hire:

Named Executive Officer	2018 Stock Option	2018 RSU Grant	2018 Retention RSU

	Grant		Grant
R. Bradley Gray	60,000	30,000	132,941
K. Thomas Bailey	95,000	35,000	n/a
Mary Tedd Allen	20,000	10,000	37,647
Joseph M. Beechem	20,000	10,000	45,294
David Ghesquiere	20,000	10,000	44,118

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Compensation Decisions for 2019: Addition of Performance Stock Units

In October 2018, working with Arnosti Consulting, our compensation committee conducted an evaluation of the peer group of publicly traded companies that we had been using to help assess executive compensation. Additional companies were added to the peer group for 2019 as follows, to provide a fuller reflection of the group of companies with which we compete for talent: Care Dx, Cerus, Codexis, Harvard BioSciences, HTG Molecular Dx, Invitae, NeoGenomics and Quanterix. In December 2018, our compensation committee retained Radford to review our executive compensation policies and practices and to conduct an extensive market analysis. Based on its benchmarking of executive equity, Radford recommended that the Company focus on meeting the market 50th percentile for annual equity value with a potential for providing equity at up to 75th percentile, depending on performance and business impact, with final equity grant determinations also taking into account Company and executive past and expected future performance, long- and short-term Company objectives, current equity values held by the executives, executive experience and skill sets, retention needs and other factors the compensation committee deems relevant.

Radford reported that over half of our peer companies include performance-based restricted stock units, or PSUs, as part of the equity mix. We had previously only issued PSUs on an ad hoc basis to one NEO. They suggested that the Company should consider adding PSUs to the time-based stock options and restricted stock units which have historically been granted to the executive team, in order to contribute strongly to the pay-for-performance culture that the Company focuses on and be consistent with market trends. Even after the 2018 grant of one-time Retention RSUs to our executives, the value of equity holdings for a majority of our executive team remained below market as benchmarked again the peer group by Radford. As a result, Radford suggested a grant of PSUs in 2019 to address these considerations. In determining the appropriate structure of the PSUs, performance goals tied to specified product and service revenue goals were established as the compensation committee determined that these metrics closely align with long-term shareholder value creation. The committee elected to allocate approximately 50% of the total 2019 equity value for the NEOs to PSU awards to emphasize the performance component. In evaluating both the incentive as well as the retentive value of the PSUs, the committee elected to include additional time-based vesting requirements at the conclusion of the performance period to further strengthen the retentive component of the PSU awards. If a change in control of the Company occurs prior to the end of the performance period, the revenue goals would no longer apply, and the award would vest as a time-based award, subject to the “double trigger” severance protections generally included in the Company’s executive equity awards that provide vesting acceleration upon termination without cause or resignation for good reason that occurs following a change in control. It is expected that these PSUs will be granted by the compensation committee in the first quarter of 2019 (which timing is consistent with its regular practice of making annual executive equity grants in the first quarter of each fiscal year) along with annual grants of stock options and RSUs.

Employment Agreements

We have entered into employment agreements with each of our NEOs with the oversight and approval of our compensation committee, or in the case of our CEO, with the oversight and approval of our compensation committee. Each of these employment agreements was negotiated by our CEO, with the exception of his own employment agreement, and contains terms intended to attract, retain and motivate our NEOs. These employment agreements have no specified term and also acknowledge that each of these NEOs is an “at will” employee, whose employment can be terminated at any time. The agreements set forth the terms and conditions of employment of each NEO, including base salary, target annual incentive compensation payment, standard employee benefit plan participation, and initial stock grant and the terms of vesting of the initial stock grant. These employment agreements were each subject to execution of our standard confidential information and invention assignment agreement.

In addition, each NEO has entered into an indemnification agreement with us, pursuant to which we have agreed to indemnify our NEOs against any costs, expenses and judgements assessed against them as a result of the performance of their duties as our employees, with certain exceptions.

Severance and Change in Control Benefits

We have entered into employment agreements with our NEOs that contain severance and change in control provisions which require us to provide specific payments and benefits in connection with the termination of our NEOs’

employment in certain circumstances, generally subject to their execution of a release of claims. In addition, as described above, NEO equity awards generally contain “double trigger” vesting acceleration provisions triggered in connection with the termination of our NEO’s employment in certain circumstances following a change in control, as described above. We believe that these severance and change in control arrangements and provisions provide retention value by encouraging our NEOs to continue their employment with us and increase stockholder value by reducing any potential distractions caused by the possibility of an involuntary termination of employment or a potential change in control, allowing our NEOs to focus on their duties and responsibilities. For a summary of the material terms and conditions of these severance and change in control arrangements, see the section titled “Potential Payments upon Termination or Change in Control” below.

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Health, Welfare and 401(k) Plan Benefits

Our NEOs are eligible to participate in all of our employee benefit plans, including our medical, dental, vision, life and disability plans, in each case on the same basis as other employees.

We maintain a tax-qualified retirement plan that provides eligible employees, including our NEOs, with an opportunity to save for retirement on a tax advantaged basis. All participants' interests in their deferrals are 100% vested when contributed. We currently match employee 401(k) contributions at a rate of $1.00 for each dollar contribution, up to 2% of an eligible employee's gross salary and at the rate of $0.50 for each dollar contribution up to an additional 4% of each employee's gross salary, capped at a maximum matching contribution amount of $4,000 per employee. Pre-tax contributions are allocated to each participant's individual account and are then invested in selected investment alternatives according to the participants' directions. Post tax contributions to a Roth account are also offered under the plan. The 401(k) plan is intended to qualify under Sections 401(a) and 501(a) of the Internal Revenue Code. As a tax-qualified retirement plan, contributions to the 401(k) plan and earnings on those contributions are not taxable to the employees until distributed from the 401(k) plan, and all contributions are deductible by us when made.

Other Executive Compensation Policies

Policy Against Speculative Transactions. Our insider trading policy expressly prohibits all of our employees, including our NEOs and our directors from engaging in speculative transactions relating to our stock including short sales, puts/calls, hedging of stock ownership positions, margin accounts or pledges, and transactions involving derivative securities relating to our common stock.

No Executive Perquisites. We do not provide perquisites or personal benefits to our NEOs.

No Tax Gross Ups. We do not provide for any tax gross up payments to our NEOs.

Stock Ownership Guidelines. In 2018 and 2019, we considered, but did not adopt, stock ownership guidelines for our NEOs and directors. The majority of our peer companies similarly have not adopted stock ownership guidelines for their executives or directors. We do expect to consider adopting such guidelines for our NEOs and directors in the future.

Tax and Accounting Treatment of Compensation. Section 162(m) of the Internal Revenue Code places a limit of $1 million per year on the amount of compensation paid to certain of our executive officers that the Company may deduct for federal income tax purposes. An exception to the $1 million limitation for performance-based compensation meeting certain requirements was repealed beginning in 2018 (other than with respect to certain grandfathered arrangements) under the Tax Cuts and Jobs Act (the "Act"). In addition, the regulations under Section 162(m) contain a transition rule that applies to companies during a limited period following the initial public offering of their stock. Pursuant to this rule, certain compensation granted before the end of a transition period (and, with respect to restricted stock units, that also are paid out before the end of the transition period) currently is not counted toward the deduction limitations of Code Section 162(m) if certain requirements are met. It is possible that certain of the equity awards granted prior to the end of our transition period in 2017 may be eligible to be excluded from the Section 162(m) deduction limits pursuant to this transition rule. As a result of these changes and the end of our transition period, except as otherwise provided in the transition relief provisions of the Act or pursuant to the transition period rules, compensation paid to any of our covered executives generally will not be deductible in 2018 or future years, to the extent that it exceeds $1 million.

Our compensation committee has not adopted a policy that any or all equity or other compensation must be deductible. Given that we have not been profitable since our inception, our compensation committee has not emphasized or sought to maximize the deductibility of executive compensation and instead has focused our compensation policies on the goals discussed throughout this CD&A. However, as we move toward profitability, the compensation committee intends to balance the objective of ensuring an effective compensation package with the need to maximize the deductibility of executive compensation. However, we cannot guarantee that any compensation in excess of $1 million paid to our covered executives will be or will remain deductible under Section 162(m).

We account for stock-based compensation in accordance with the requirements of Accounting Standards Codification Topic 718, Compensation - Stock Compensation. Under the fair value provisions of this statement, stock-based compensation cost is measured at the grant date based on the fair value of the award.

Compensation Recovery Policy. As a public company subject to Section 304 of the Sarbanes-Oxley Act of 2002, if we are required to restate our financial results as the result of misconduct or due to our material noncompliance with any financial reporting requirements under the federal securities laws, our chief executive officer and chief financial officer may be legally required to reimburse us for any bonus or incentive-based or equity-based compensation they receive. In addition, we will comply with the requirement of the Dodd-Frank Wall Street Reform and Consumer Protection Act and anticipate that we will adopt a compensation recovery policy once final regulations on the subject have been adopted.

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Compensation Committee Report

Our compensation committee has reviewed the Compensation Discussion and Analysis provided above with management. Based on such review and discussion, our compensation committee has recommended to the Board of Directors that the Compensation Discussion and Analysis be included in this annual report on Form 10-K and proxy statement relating to the 2019 meeting of stockholders.

Respectfully submitted by the members of the compensation committee of the board of directors:

Dr. Nicholas Galakatos (Chairman)
Dr. Kirk D. Malloy
Gregory Norden

Summary Compensation Table for Fiscal Years 2018, 2017 and 2016

The table below sets forth compensation information for the individuals who served as our chief executive officer and chief financial officer during 2018, and our three most highly compensated executive officers, other than our chief executive officer or chief financial officer, who served as executive officers as of December 31, 2018. We refer to these five individuals throughout this report as our "NEOs" for 2018.

Name and Principal Position	Year	Salary	Stock Awards[1]	Option Awards[1]	Non-Equity Incentive Plan Compensation[2]	All Other Compensation[3]	Total
R. Bradley Gray	2018	$565,000	$1,107,999	$226,661	$ 624,325	$ 4,000	$2,527,985
President and Chief Executive	2017	561,667	564,000	570,022	240,125	4,000	1,939,814
Officer	2016	533,333	404,375	378,814	375,233	4,000	1,695,755
K. Thomas Bailey Chief Financial Officer	2018	400,000	291,550	430,988	270,000	3,333	1,395,871
Mary Tedd Allen Senior Vice President, Operations	2018	320,000	324,000	75,554	172,800	4,000	896,354
Joseph M. Beechem	2018	385,000	375,999	75,554	231,000	4,000	1,071,553
Senior Vice President, Research & Development	2017	380,653	188,000	190,007	107,800	4,000	870,460
David W. Ghesquiere	2018	375,000	368,002	75,554	220,313	4,000	1,042,869
Senior Vice President,	2017	372,458	188,000	190,007	93,750	4,000	848,215
Corporate & Business Development	2016	355,000	559,175	532,548	149,850	4,000	1,600,573

(1) The dollar amounts in this column represent the aggregate grant date fair value of restricted stock unit awards and stock option awards granted in 2018, 2017 and 2016, respectively. These amounts have been computed in accordance with FASB ASC Topic 718. Pursuant to SEC rules, the amounts shown exclude the impact of estimated forfeitures related to service-based vesting conditions. For a discussion of valuation assumptions, see Note 2 and Note 11 of the Notes to Consolidated Financial Statements under Item 8 of this report.

(2) The amounts in this column represent the amounts earned and payable each year under the bonus plan for such year, all of which were paid in the subsequent year.

(3) The amounts in this column consist of matching contributions made by us pursuant to our 401(k) plan.

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Grants of Plan-Based Awards

The following table sets forth each equity and non-equity based award granted to our NEOs during 2018.

Name	Grant Date	Name of Plan	Estimated Future Payouts Under Non-Equity Incentive Plan Awards[1]			All Other Stock Awards: Number of Shares of Stock or Units (#) [2]	All Other Option Awards: Number of Securities Underlying Options (#) [2][4]	Exercise or Base Price of Option Awards	Grant Date Fair Value of Stock and Option Awards [3]
			Threshold	Target	Maximum				
R. Bradley Gray		2018 Non-Equity Plan		$480,250					
	2/6/2018	2013 Equity Incentive Plan				162,941			$1,107,999
	2/6/2018	2013 Equity Incentive Plan					60,000	$ 6.80	226,661
K. Thomas Bailey		2018 Non-Equity Plan		200,000					
	1/18/2018	2018 Inducement Equity Incentive Plan				35,000			291,550
	1/18/2018	2018 Inducement Equity Incentive Plan					95,000	8.16	430,988
Mary Tedd Allen		2018 Non-Equity Plan		144,000					
	2/6/2018	2013 Equity Incentive Plan				47,647			324,000
	2/6/2018	2013 Equity Incentive Plan					20,000	6.80	75,554
Joseph M. Beechem		2018 Non-Equity Plan		192,500					
	2/6/2018	2013 Equity Incentive Plan				55,294			375,999
	2/6/2018	2013 Equity Incentive Plan					20,000	6.80	75,554
David Ghesquiere		2018 Non-Equity Plan		187,500					
	2/6/2018	2013 Equity Incentive Plan				54,118			368,002
	2/6/2018	2013 Equity Incentive Plan					20,000	6.80	75,554

(1)

The amounts reported in this column represent the target amount of annual performance-based incentive bonus compensation that might have been paid to each named executive officer for 2018 performance. There are no threshold or maximum levels for the award. The actual payouts approved for 2018 performance are shown in the "Non-Equity Incentive Plan Compensation" column of the "Summary Compensation Table." These awards are described in further detail in the Compensation Discussion and Analysis in the section entitled "Non-Equity Incentive Plan Compensation & Bonus — 2018 Non-Equity Incentive Plan Payments." The bonus payouts approved pursuant to the 2018 Non-Equity Plan will be paid during the first quarter of 2019.

(2) The amounts in these columns represent restricted stock units and stock options granted and are described in further detail above in the "Compensation Discussion and Analysis" and below in the "Outstanding Equity Awards at December 31, 2018" table. The per share exercise price of the stock options is equal to the closing price of a share of NanoString Technologies, Inc.'s stock on the date of grant.

(3) The dollar amounts in this column reflect the aggregate grant date fair value of the awards granted in 2018. These amounts have been computed in accordance with FASB ASC Topic 718. Pursuant to SEC rules, the amounts shown exclude the impact of estimated forfeitures related to service-based vesting conditions. For a discussion of valuation assumptions, see Note 2 and Note 11 of the Notes to Consolidated Financial Statements under Item 8 of this report. The option exercise price has not been deducted from the amounts indicated above. Regardless of the value placed on a stock option on the grant date, the actual value of the option will depend on the market value of NanoString Technologies, Inc.'s common

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stock at such date in the future when the option is exercised. The proceeds to be paid to the individual following the exercise of the option do not include the option exercise price.

(4) The amounts in this column represent the stock option awards granted in 2018.

Outstanding Equity Awards at Fiscal Year-End

The following table presents information concerning equity awards held by our NEOs at the end of 2018.

	Option Awards						Stock Awards	
		Number of Securities Underlying Option (#)						
Name	Vesting Commencement Date	Exercisable		Unexercisable		Option Exercise Price	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)	Market Value of Shares or Units of Stock That Have Not Vested
R. Bradley Gray	June 25, 2010	145,424	(1)	—		$ 2.24	June 29, 2020	—	—
	March 1, 2012	126,582	(1)	—		1.92	February 28, 2022	—	—
	January 10, 2013	61,309	(1)	—		6.72	January 9, 2023	—	—
	January 31, 2014	90,000	(1)	—		18.18	January 30, 2024	—	—
	February 9, 2015	95,836	(2)	4,164	(2)	12.77	February 8, 2025	—	—
	February 3, 2016	—		—		—		10,418 (3)	$ 154,499 (4)
	February 3, 2016	44,272	(2)	18,228	(2)	12.94	February 2, 2026	—	—
	February 6, 2017	27,500	(2)	32,500	(2)	18.80	February 5, 2027	—	—
	March 6, 2017	—	(2)	—		—		20,001 (3)	296,615 (4)
	February 6, 2018	12,500	(2)	47,500	(2)	6.80	February 5, 2028	—	—
	February 6, 2018	—		—		—		30,000 (3)	444,900 (4)
	February 6, 2018	—		—		—		132,941 (3)	1,971,515 (4)
K. Thomas Bailey	January 16, 2018	—		95,000	(5)	8.16	January 15, 2028	—	—
	January 18, 2018	—		—		—		35,000 (6)	519,050 (4)
Mary Tedd Allen	March 1, 2012	31,250	(1)	—		1.92	February 28, 2022	—	—
	January 10, 2013	10,000	(1)	—		6.72	January 9, 2023	—	—
	January 31, 2014	25,000	(1)	—		18.18	January 30, 2024	—	—
	February 9, 2015	19,167	(2)	833	(2)	12.77	February 8, 2025	—	—
	February 3, 2016	—		—		—		2,000 (3)	29,660 (4)
	February 3, 2016	8,500	(2)	3,500	(2)	12.94	February 2, 2026	—	—

	February 6, 2017	7,333	(2)	8,667	(2)	18.80	February 5, 2027	—		—	
	February 6, 2017	—		—		—		5,334	(3)	79,103	(4)
	February 6, 2018	4,166	(2)	15,834	(2)	6.80	February 5, 2028	—		—	
	February 6, 2018	—		—		—		10,000	(3)	148,300	(4)
	February 6, 2018	—		—		—		37,647	(3)	595,952	(4)
Joseph M. Beechem	April 19, 2012	82,968	(1)	—		1.92	April 18, 2022	—		—	
	January 10, 2013	24,999	(1)	—		6.72	January 9, 2023	—		—	
	January 31, 2014	35,000	(1)	—		18.18	January 30, 2024	—		—	
	February 9, 2015	43,126	(2)	1,874	(2)	12.77	February 8, 2025	—		—	
	February 3, 2016	—		—		—		4,168	(3)	61,811	(4)
	February 3, 2016	17,708	(2)	7,292	(2)	12.94	February 2, 2026	—		—	
	February 6, 2017	9,166	(2)	10,834	(2)	18.80	February 5, 2027	—		—	
	March 6, 2017	—		—		—		6,667	(3)	98,872	(4)
	February 6, 2018	4,166	(2)	15,834	(2)	6.80	February 5, 2028	—		—	
	February 6, 2018	—		—		—		10,000	(3)	148,300	(4)
	February 6, 2018	—		—		—		45,294	(3)	671,710	(4)
David Ghesquiere	December 5, 2013	93,000	(1)	—		12.50	December 4, 2023	—		—	
	January 31, 2014	4,000	(1)	—		18.18	January 30, 2024	—		—	
	February 9, 2015	43,126	(2)	1,874	(2)	12.77	February 8, 2025	—		—	
	February 3, 2016	—		—		—		4,168	(3)	61,811	(4)

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February 5, 2016	17,708 (2)	7,292 (2)	12.94	February 4, 2026	—	—
November 10, 2016	—	—	—		2,500 (3)	37,075 (4)
November 10, 2016	—	—	—		10,000 (3)	148,300 (4)
November 11, 2016	7,812 (2)	7,188 (2)	22.71	November 10, 2026	—	—
November 11, 2016	—	20,000 (2)	22.71	November 10, 2026	—	—
February 6, 2017	9,166 (2)	10,834 (2)	18.80	February 5, 2027	—	—
February 6, 2017	—	—	—		6,667 (3)	98,872 (4)
February 6, 2018	4,166 (2)	15,834 (2)	6.80	February 5, 2028	—	—
February 6, 2018	—	—	—		10,000 (3)	148,300 (4)
February 6, 2018	—	—	—		44,118 (3)	654,270 (4)

(1) The options have fully vested.

(2) Options vest in equal monthly installments from the vesting commencement date over four years. Notwithstanding the foregoing, if the named executive officer is terminated without cause or resigns for good reason (each as defined in the executive's applicable stock option agreement), in each case, following a change in control (as defined under our 2013 Equity Incentive Plan), then 100% of the then-unvested shares will vest.

(3) One third of the restricted stock units vest on the first market trading day following the first anniversary of vesting commencement date and one third of the restricted stock units vest annually on the first market trading day after each of the second and third anniversaries of the vesting commencement date. Notwithstanding the foregoing, if the named executive officer is terminated without cause or resigns for good reason (each as defined in the executive's applicable restricted stock unit agreement), in each case, following a change in control (as defined under our 2013 Equity Incentive Plan), then 100% of the then-unvested shares will vest.

(4) The market value of unvested shares is calculated by multiplying the number of unvested shares by the closing market price of our common stock on The NASDAQ Stock Market on December 31, 2018, the last trading day of the year, which was $14.83 per share.

(5) Twenty-five percent of the options vest on the one year anniversary of the start date, and the remaining options will vest monthly over the next thirty-six months in approximately equal monthly amounts. Notwithstanding the foregoing, if Mr. Bailey is terminated without cause or resigns for good reason (each as defined in the executive's applicable stock option agreement), in each case, following a change in control (as defined under our 2018 Inducement Equity Incentive Plan), then 100% of the then-unvested shares will vest.

(6) The restricted stock units vest on the second anniversary of Mr. Bailey's start date. Notwithstanding the foregoing, if Mr. Bailey is terminated without cause or resigns for good reason (each as defined in the executive's applicable restricted stock unit agreement), in each case, following a change in control (as defined under our 2018 Inducement Equity Incentive Plan), then 100% of the then-unvested shares will vest.

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Option Exercises and Stock Vested

The following table sets forth information regarding exercises of equity awards by our NEOs for the year ended December 31, 2018.

	Option Awards		Stock Awards	
Name	Number of Shares Acquired on Exercise (#)	Value Realized on Exercise	Number of Shares Acquired on Vesting (#)	Value Realized on Vesting
R. Bradley Gray	—	$ —	20,415	$135,181
K. Thomas Bailey	—	—	—	—
Mary Tedd Allen	41,250	659,175	4,666	30,836
Joseph M. Beechem	—	—	7,499	49,710
David Ghesquiere	—	—	14,999	120,235

Executive Employment Arrangements

Each NEO is an "at-will" employee. Employment agreements with our NEOs provide for one or more of the following: annual base salary, an annual cash incentive payment targeted at a percentage of the NEO's base salary, initial grants of stock options and/or restricted stock units and participation in our Company-wide employee benefit plans. In addition, the employment agreements we have entered into with our NEOs provide for severance payments and benefits as described below.

The current base salary and target annual cash incentive as a percentage of each NEO's base salary for 2019 is as follows:

Name	2019 Base Salary	Value Realized on Exercise
R. Bradley Gray	$600,000	85%
K. Thomas Bailey	415,000	50
Mary Tedd Allen	330,000	50
Joseph M. Beechem	395,000	50
David Ghesquiere	382,500	50

2018 Potential Payments upon Termination or Change in Control

We have entered into employment agreements with our NEOs that contain severance and change in control provisions which require us to provide specific payments and benefits in connection with the termination of our NEOs' employment in certain circumstances. If the event of our termination of the NEO's employment other than for "cause" (as defined in each employment agreement and summarized below) (and that is not by reason of the NEO's death or disability), or due to the NEO's resignation from employment with us for "good reason" (as defined in each employment agreement and summarized below), the NEO will receive continuing base salary payments for a period of six months (or in Mr. Gray's case, 12 months). However, if such termination other than for "cause," death or disability, or such resignation for "good reason," in either case, occurs within 12 months following a "change in control" (as defined in our 2013 Equity Incentive Plan or, for Mr. Bailey, under our 2018 Inducement Equity Incentive Plan), the NEO instead will be entitled to the following:

- a lump sum payment equal to 12 months (or in Mr. Gray's case, 24 months) of his or her then-effective base salary;
- 100% (or in Mr. Gray's case, 200%) of his or her target annual cash incentive payment. This will be calculated based on the completion of a full calendar year and at the then-effective target percentage times the then-effective base salary; and
-

reimbursement of premiums paid for continuation coverage under COBRA for the NEO and his or her eligible dependents for up to 12 months (or in Mr. Gray's case, 24 months).

In order to receive the severance benefits detailed above, each NEO is obligated to execute a release of claims against us, provided that the release becomes enforceable and irrevocable not later than 60 days following such NEO's termination date, and to continue to comply with the terms of certain non-solicitation and non-competition requirements under the NEO's proprietary information and inventions agreement (and for Messrs. Gray and Ghesquiere and Drs. Beechem and Allen, certain other restricted covenants, such as non-disparagement requirements, contained in the employment agreement, and for Mr.

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Bailey, any other obligations under his proprietary information and inventions agreement). Mr. Bailey's release of claims agreement will contain certain restrictive covenants, such as non-solicit provisions and mutual non-disparagement requirements.

For each of Messrs. Gray and Ghesquiere and Drs. Beechem and Allen, the employment agreements provided "double trigger" acceleration of vesting of their new hire equity awards in the event of a termination without cause or resignation for good reason, in either event that occurs after a change in control of the Company. However, each of these new hire awards have fully vested based on continued service to the Company over time. NEO equity awards generally contain similar "double trigger" vesting acceleration provisions, as described below.

We do not provide for any gross ups for any excise taxes that may be imposed by Section 4999 of the Internal Revenue Code. Mr. Bailey's employment agreement provides that, in the event that any payment to Mr. Bailey is subject to the excise tax imposed by Section 4999 of the Internal Revenue Code (as a result of a payment being classified as a "parachute payment" under Section 280G of the Internal Revenue Code), Mr. Bailey will be entitled to receive such payment as would entitle him to receive the greatest after-tax benefit of either the full payment or a lesser payment which would result in no portion of such severance benefits being subject to excise tax.

For purposes of the 2013 Equity Incentive Plan, 2018 Inducement Equity Incentive Plan, and change in control benefits contained in the NEOs' employment agreements, "change in control" means generally means:

- the date that any one person, or more than one person acting as a group, acquires ownership of our capital stock that, together with the stock held by such person or such group, constitutes more than 50% of the total voting power of our capital stock;
- the date that a majority of members of the board is replaced during any 12 month period by directors whose appointment or election is not endorsed by a majority of the members of the board prior to such date; or
- the date that any one person, or more than one person acting as a group, acquires (or has acquired during the 12 month period ending on the date of the most recent acquisition by such person or group) assets from us that have a total gross fair market value equal to or more than 50% of the total gross fair market value of all of our assets immediately prior to such acquisition or acquisitions.

For purposes of each of the employment agreements with our NEOs (other than Mr. Bailey), "cause" means generally:

- a violation of one of our material written policies that continues uncured for 30 days after notification by us;
- an act of dishonesty in connection with such NEO's responsibilities as our employee;
- such NEO's conviction of, or plea of nolo contendere to, a felony;
- such NEO's gross misconduct;
- such NEO's failure or refusal to follow the lawful and proper directives of the board of directors which are within his or her duties that are not corrected within 30 days after written notice; or
- such NEO's material breach of his or her proprietary information agreement or the non-disparagement provision of his or her employment agreement.

For purposes of the employment agreement with Mr. Bailey, "cause" means generally:

- his failure to substantially perform his duties and responsibilities (other than a failure from his disability) after receiving written notice of the alleged failure and 10 days' opportunity to cure;
- his commission of any act of fraud, embezzlement, dishonesty or misrepresentation;
- his violation of any federal or state law or regulation applicable to our business or the business of our affiliates;
- his breach of any confidentiality agreement or invention assignment agreement with us (or any affiliate of our affiliates);
- his being convicted of, or entering a plea of nolo contendere to, a felony or committing any act of moral turpitude, dishonesty or fraud against, or the misappropriation of material property belonging to, us or our affiliates; or
- his failure to provide us with proof of his authorization to work in the U.S. (which has been provided)

For purposes of each of the employment agreements with our NEOs (other than Mr. Bailey), "good reason" means generally any of the following, without such NEO's written consent:

- for Mr. Gray, a material and permanent diminution in his duties, authority or responsibilities causing such position to be of materially reduced stature or responsibility including a requirement that he is required to report to a corporate

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officer or employee instead of reporting directly to our board of directors or, if we become a subsidiary of another corporation, the board of directors of our parent company;

- for Drs. Beechem and Allen and Mr. Ghesquiere, a material, adverse and permanent diminution in such NEO's position, causing such position to be of materially reduced stature or responsibility, provided that the continuance of his or her duties and responsibilities at the subsidiary or divisional level following a change in control, rather than at the parent, combined or surviving company level following the change in control, will not be deemed good reason within the meaning of this clause;
- for Mr. Gray, our material breach of any provision of his employment agreement;
- for Drs. Beechem and Allen and Mr. Ghesquiere, our material breach of such NEO's employment agreement that continues uncured for 30 days following notice by him or her;
- a refusal by such NEO to relocate to a facility or location more than 40 miles (or, for Mr. Gray, more than 50 miles) from our then-current location; or
- for Drs. Beechem and Allen, and Mr. Ghesquiere, a material reduction in the kind and level of employee benefits (other than base salary) which results in a substantial reduction of the NEO's overall benefits package (other than a reduction applicable to officers of the Company generally).

To qualify as a resignation for good reason, the NEO must provide notice to us within 30 days (90 days for Mr. Gray) after the initial existence of the condition or event described above and allow us to cure the condition or event within 30 days following our receipt of the notice, and if not cured, the NEO thereafter elects to terminate his or her employment voluntarily within 30 days after the expiration of the period for correcting such condition or event. In addition, any change in the NEO's job function or responsibilities in order to accommodate a disability under the Americans with Disabilities Act, the Family Medical Leave Act or any analogous statute or law will not constitute a basis for the NEO to resign for good reason.

For purposes of the employment agreement with Mr. Bailey, "good reason" means generally his resignation within 30 days after the expiration of the cure period described below following the occurrence of any of the following, without his express written consent:

- the assignment to him of any duties or the reduction of his duties, either of which results in a material diminution in his position or responsibilities with us, provided that the continuance of his duties and responsibilities at the subsidiary or divisional level following a change in control, rather than at the parent, combined, or surviving company level following such change in control will not be deemed good reason;
- a material reduction in his base salary;
- a material change in the geographic location at which he must perform services (for purposes of the foregoing, his relocation to a facility or a location less than 25 miles from his then-present location will not be considered a material change in geographic location); or
- our material breach of any material provision of his employment agreement.

Mr. Bailey's resignation will not be deemed to be for good reason unless he has first provided us with written notice of the acts or omissions constituting the grounds for good reason within 90 days of the initial existence of the grounds for good reason and a reasonable cure period of not less than 30 days following the date we receive such notice, and such condition has not been cured during such period.

NEO Equity Awards

The equity awards granted to our NEOs generally include "double trigger" acceleration provisions. Under these provisions, if the NEO is terminated without "cause" or resigns for "good reason," in each case, following a "change in control" (as defined under the applicable equity plan under which the award was granted), the equity award will vest in full immediately prior to such termination, provided that with respect to Mr. Bailey's new hire stock options and RSUs, in order to receive this acceleration of vesting, his termination without cause or for good reason must occur within 12 months following a change in control.

With respect to the above-described equity acceleration provisions, the definitions of "cause" and "good reason" are substantially the same as those set forth in Mr. Bailey's employment agreement and described above, except that the "cause" definition does not include failure to provide proof of authorization to work in the U.S., and the good reason definition is triggered by a material breach of the applicable equity award agreement, rather than of the employment

agreement.

2013 Equity Incentive Plan and 2018 Inducement Equity Incentive Plan

Our 2013 Equity Incentive Plan, or the 2013 Plan, and our 2018 Inducement Equity Incentive Plan, each provide that in the event of a merger or "change in control," as defined under the applicable plan, each outstanding award will be treated as the administrator determines, except that if a successor corporation or its parent or subsidiary does not assume or substitute an

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equivalent award for any outstanding award, then such award will fully vest, all restrictions on such award will lapse, all performance goals or other vesting criteria applicable to such award will be deemed achieved at 100% of target levels, and such award will become fully exercisable, if applicable, for a specified period prior to the transaction. The award will then terminate upon the expiration of the specified period of time.

Under our 2013 Plan, if the service of an outside director is terminated on or following a change in control, other than pursuant to a voluntary resignation not at the request of the acquirer, his or her outstanding stock options and stock appreciation rights, if any, will vest fully and become immediately exercisable, all restrictions on his or her restricted stock and restricted stock units will lapse, and all performance goals or other vesting requirements for his or her awards with performance-based vesting will be deemed achieved at 100% of target levels, and all other terms and conditions met.

The following table describes the payments and benefits that each of our NEOs would be entitled to receive in the circumstances described above under the plans and arrangements with our NEOs described above. Payments and benefits are estimated assuming that the triggering event took place on December 31, 2018, and the price per share of our common stock is the closing price on The Nasdaq Global Market as of that date.

	Employment Termination Without Cause or For Good Reason and No Change in Control	Employment Termination Without Cause or For Good Reason Within 12 months Following a Change in Control				Employment Termination Without Cause or For Good Reason More than 12 months after a Change in Control	
Name	Severance Payments [1]	Severance Payments [2]	Annual Cash Incentive Payment [3]	Equity Acceleration [4]	Health Care Benefits [5]	Severance Payments [1]	Equity Acceleration [4]
R. Bradley Gray	$ 565,000	$1,130,000	$ 960,500	$ 3,291,983	$48,595	$565,000	$ 3,291,983
K. Thomas Bailey	200,000	400,000	200,000	1,152,700	21,600	200,000	—
Mary Tedd Allen	160,000	320,000	144,000	988,493	7,063	160,000	988,493
Joseph M. Beechem	192,500	385,000	192,500	1,125,482	21,600	192,500	1,125,482
David Ghesquiere	187,500	375,000	187,500	1,293,417	15,003	187,500	1,293,417

(1) The amount shown in this column for each NEO consists of continuing payments of the NEO's base salary as of December 31, 2018, for a period of six months (or in Mr. Gray's case, twelve months).

(2) The amount shown in this column for each NEO consists of a lump sum payment equal to twelve months (or in Mr. Gray's case, twenty-four months) of the NEO’s base salary as of December 31, 2018.

(3) The amount shown in this column for each NEO consists of a lump sum payment equal to 100% (or in Mr. Gray's case, 200%) of the NEO’s target annual cash incentive payment, which is calculated based on the completion of a full calendar year and the then-effective target percentage times the then-effective base salary.

(4) The amount shown in this column for each NEO consists of the value of the portions of the unvested in-the-money options and restricted stock unit awards held by the NEO for which vesting is accelerated upon the triggering event. The value of each such portion of such equity awards is calculated by multiplying (x) the closing stock price of our common stock of $14.83 per share on December 31, 2018, as reported on the Nasdaq Global Market (and in the case of options, less the exercise price per share of the option) by (y) the number of shares covered by such portion of the equity award.

(5) The amount shown in this column for each NEO consists of the estimated cost of reimbursement of premiums paid for continuation coverage under COBRA for the NEO and his or her eligible dependents for up to 12 months (or in Mr. Gray’s case, 24 months).

Risk Analysis of our Compensation Plans

Our compensation committee reviews and discusses with management the risks arising from our executive compensation philosophy and practices applicable to all employees to determine whether they encourage excessive risk-taking and to evaluate compensation policies and practices that could mitigate such risks. In addition, our compensation committee engaged Arnosti Consulting in 2017 and 2018 and then Radford in at the end of 2018 to independently review our executive compensation program. Based on those reviews, the compensation committee structures our executive compensation program to encourage our NEOs to focus on both long-term and short-term success. We do not believe that our executive compensation program creates risks that are reasonably likely to have a material adverse effect on us.

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

The following table sets forth certain information with respect to the beneficial ownership of our common stock at January 31, 2019 for:

- each person who we know beneficially owns more than 5% of our common stock;
- each of our directors;
- each of our named executive officers; and
- all of our directors and executive officers as a group.

The percentage of beneficial ownership shown in the table is based upon 31,060,827 shares outstanding as of January 31, 2019.

Information with respect to beneficial ownership has been furnished by each director, executive officer or beneficial owner of more than 5% of our common stock. We have determined beneficial ownership in accordance with the rules of the SEC. These rules generally attribute beneficial ownership of securities to persons who possess sole or shared voting power or investment power with respect to those securities. In addition, the rules take into account shares of common stock issuable pursuant to the exercise of stock options or warrants that are either immediately exercisable or exercisable on or before the 60th day after January 31, 2019, as well as restricted stock units that vest on or before such date. Certain of the options granted to our named executive officers may be exercised prior to the vesting of the underlying shares. We refer to such options as being "early exercisable." Shares of common stock issued upon early exercise are subject to our right to repurchase such shares until such shares have vested. These shares are deemed to be outstanding and beneficially owned by the person holding those options or a warrant for the purpose of computing the percentage ownership of that person, but they are not treated as outstanding for the purpose of computing the percentage ownership of any other person. Unless otherwise indicated, the persons or entities identified in this table have sole voting and investment power with respect to all shares shown as beneficially owned by them, subject to applicable community property laws.

Except as otherwise noted below, the address for each person or entity listed in the table is c/o NanoString Technologies, Inc., 530 Fairview Avenue, N., Seattle, Washington 98109.

Name of Beneficial Owner	Shares	Percentage
5% Stockholders:		
Entities affiliated with Clarus Funds [1]	4,036,025	13.0 %
Cadian Capital Management, LP [2]	2,301,269	7.4 %
Entities affiliated with Levin Capital Strategies [3]	2,228,595	7.2 %
Blackrock, Inc. [4]	1,586,937	5.1 %
Directors and Named Executive Officers:		
R. Bradley Gray [5]	781,654	2.5 %
K. Thomas Bailey [6]	27,708	*
Mary Tedd Allen, Ph.D. [7]	158,586	*
Joseph M. Beechem, Ph.D. [8]	266,701	*
David W. Ghesquiere [9]	242,441	*
William D. Young [10]	155,178	*
Elisha Finney [11]	26,075	*
Nicholas Galakatos, Ph.D. [12]	48,779	*
Robert Hershberg, M.D., Ph.D. [13]	41,545	*
Kirk Malloy, Ph.D. [14]	34,964	*
Gregory Norden [15]	69,185	*
Charles P. Waite [16]	50,486	*
All directors and executive officers as a group (13 persons) [17]	1,941,909	5.9 %

[*] Less than one percent.

[1] The number of shares owned set forth above is based solely on the most recently available Schedule D/A filed with the SEC on January 11, 2019. Consists of 4,036,025 shares held directly by Clarus Lifesciences II, L.P. ("Clarus").

Clarus Ventures II GP, L.P (“Clarus GP”) is the general partner of Clarus. Blackstone Clarus II L.L.C. is the general partner of Clarus GP. The sole member of Blackstone Clarus II L.L.C. is Blackstone Holdings II L.P. The general partner of Blackstone Holdings II L.P. is Blackstone Holdings I/II GP Inc. The controlling stockholder of Blackstone Holdings I/II

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GP Inc. is The Blackstone Group L.P. The general partner of The Blackstone Group L.P. is Blackstone Group Management L.L.C. Blackstone Group Management L.L.C. is wholly-owned by Blackstone's senior managing directors and controlled by its founder, Stephen A. Schwarzman. Each of such entities and Mr. Schwarzman may be deemed to beneficially own the shares beneficially owned by Clarus, but each (other than Clarus) disclaims beneficial ownership of such shares. The address for each of Clarus and Clarus GP is c/o Clarus Ventures LLC, 101 Main Street, Suite 1210, Cambridge, Massachusetts 02142. The address for each of the other Blackstone entities and Mr. Schwarzman is c/o The Blackstone Group L.P., 345 Park Avenue, New York, New York 10154.

(2) The number of shares owned set forth above is based solely on the most recently available Schedule 13G/A filed with the SEC on February 13, 2018. All securities reported in the Schedule 13G are directly owned by advisory clients of Cadian Capital Management, LP ("Cadian"). None of the advisory clients individually owns more than 5% of the common stock of NanoString Technologies, Inc. Eric Bannasch may be deemed to beneficially own the shares held of record by Cadian. The address of each of the foregoing persons and entities is 535 Madison Avenue, 36th Floor, New York, NY 10022.

(3) The number of shares owned set forth above is based solely on the most recently available Schedule 13G filed with the SEC on January 24, 2018. Consists of 1,050,851 shares held directly by Levin Capital Strategies, L.P., and 1,177,744 shares held directly by Levin Capital Strategies G.P., LLC. The address of Levin Capital Strategies is 595 Madison Avenue, 17th Floor, New York, New York 10022.

(4) Based solely on the most recently available Schedule 13G filed with the SEC on January 25, 2018. The address of the foregoing persons and entities is 55 East 52nd Street, New York, New York 10055.

(5) Includes 87,931 shares held, 74,730 shares attributable to restricted stock units that will vest within 60 days of January 31, 2019 and options to purchase 618,993 shares that are exercisable within 60 days of January 31, 2019, all of which are vested as of such date.

(6) Consists of options to purchase 27,708 shares that are exercisable within 60 days of January 31, 2019, all of which are vested as of such date.

(7) Includes 28,789 shares held, 20,548 shares attributable to restricted stock units that will vest within 60 days of January 31, 2019 and options to purchase 109,249 shares that are exercisable within 60 days of January 31, 2019, all of which are vested as of such date.

(8) Includes 17,699 shares held, 25,932 shares attributable to restricted stock units that will vest within 60 days of January 31, 2019 and options to purchase 223,070 shares that are exercisable within 60 days of January 31, 2019, all of which are vested as of such date.

(9) Includes 31,048 shares held, 25,540 shares attributable to restricted stock units that will vest within 60 days of January 31, 2019 and options to purchase 185,853 shares that are exercisable within 60 days of January 31, 2019, all of which are vested as of such date.

(10) Includes 30,000 shares held, and options to purchase 125,178 shares that are exercisable within 60 days of January 31, 2019, all of which are vested as of such date.

(11) Consists of options to purchase 26,075 shares that are exercisable within 60 days of January 31, 2019, all of which are vested as of such date.

(12) Consists of options to purchase 48,779 shares that are exercisable within 60 days of January 31, 2019, all of which are vested as of such date. In connection with The Blackstone Group's acquisition of Clarus Ventures in October 2018, voting and dispositive control of the shares held by Clarus Ventures is as described in footnote 1 above.

(13) Consists of options to purchase 41,545 shares that are exercisable within 60 days of January 31, 2019, all of which are vested as of such date.

(14) Consists of options to purchase 34,964 shares that are exercisable within 60 days of January 31, 2019, all of which are vested as of such date.

(15) Includes 10,000 shares held and options to purchase 59,185 shares that are exercisable within 60 days of January 31, 2019, all of which are vested as of such date.

(16) Includes 1,707 shares held and options to purchase 48,779 shares that are exercisable within 60 days of January 31, 2019, all of which are vested as of such date.

(17)

Includes 207,820 shares held, 157,004 shares attributable to restricted stock units that will vest within 60 days of January 31, 2019 and options to purchase 1,577,085 shares that are exercisable within 60 days of January 31, 2019.

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

Related Person Transaction Policy

We have adopted a formal, written policy that our executive officers, directors (including director nominees), holders of more than 5% of any class of our voting securities, and any member of the immediate family of or any entities affiliated with any of the foregoing persons, are not permitted to enter into a related person transaction with us without the prior approval or, in the case of pending or ongoing related person transactions, ratification of our audit committee. For purposes of our policy, a related person transaction is a transaction, arrangement or relationship where we were, are or will be involved and in which a related person had, has or will have a direct or indirect material interest, other than transactions available to all of our United States employees.

Certain transactions with related parties, however, are excluded from the definition of a related person transaction including, but not limited to: (1) transaction with another company at which a related person's only relationship is as an employee (excluding as an executive officer or a director) or beneficial owner of less than 5% of that company's shares; (2) transaction where the related person's interest arises solely from the ownership of our equity securities and all holders of our common stock received the same benefit on a pro rata basis (e.g. dividends); (3) transactions available to all employees generally; (4) transactions involving the purchase or sale of products or services in the ordinary course of business, not exceeding $50,000; and (5) transactions in which the related person's interest derives solely from his or her service as a director, trustee or officer (or similar position) of a not-for-profit organization or charity that receives donations from the Company.

No member of the audit committee may participate in any review, consideration or approval of any related person transaction where such member or any of his or her immediate family members, or any entities with which the audit committee member is affiliated, is the related person. In approving or rejecting the proposed agreement, our audit committee shall consider the relevant facts and circumstances available and deemed relevant to the audit committee, including, but not limited to: (1) the benefits and perceived benefits, or lack thereof, to our company; (2) the impact on a director's independence in the event the related person is a director, an immediate family member of a director or an entity in which a director is a partner, stockholder or executive officer; (3) the materiality and character of the related person's direct and indirect interest; (4) the actual or apparent conflict of interest of the related person; (5) the availability of other sources for comparable products or services; (6) the opportunity costs of alternative transactions; (7) the terms of the transaction; (8) the commercial reasonableness of the terms of the proposed transaction; and (9) terms available to unrelated third parties or to employees under the same or similar circumstances. In reviewing proposed related person transactions, the audit committee will only approve or ratify related person transactions that are in, or not inconsistent with, the best interests of our company and stockholders, as the audit committee determines in good faith.

In addition to the arrangements described below, we have also entered into the arrangements which are described where required in the section captioned "Executive Compensation — Executive Employment Arrangements".

Indebtedness of Directors and Officers

None of our current or former directors or executive officers is indebted to us, nor are any of these individuals indebted to another entity which indebtedness is the subject of a guarantee, support agreement, letter of credit or other similar arrangement or understanding provided by us.

Other Transactions

We have entered into separate indemnification agreements with each of our directors and certain of our officers, including our named executive officers.

We have granted stock options and restricted stock units to our named executive officers, other executive officers and our non-employee directors.

Certain of our executive officers are participants in our 2013 Employee Stock Purchase Plan.

Director Independence

Our board of directors has undertaken a review of its composition, the composition of its committees and the independence of directors and considered whether any director has a material relationship with us that could compromise his or her ability to exercise independent judgment in carrying out his or her responsibilities. Based upon information requested from and provided by each director concerning his or her background, employment and

affiliations, including family relationships, the board of directors has determined that none of Messrs. Young, Waite and Norden, Ms. Finney, and Drs. Galakatos, Hershberg, and Malloy, representing seven of our eight directors, has a relationship which would interfere with the exercise of independent judgment in carrying out the responsibilities of a director and that each of these directors is an “independent director” as defined under the rules of The Nasdaq Stock Market. The board of directors also determined that Messrs. Norden

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(chairman), Waite and Young, and Ms. Finney, who comprise our audit committee, Drs. Galakatos (chairman) and Malloy and Mr. Norden, who currently comprise our compensation committee, and Messrs. Waite (chairman) and Young and Drs. Galakatos and Hershberg, who comprise our nominating and corporate governance committee, satisfy the independence standards for those committees established by applicable SEC rules and the rules of The Nasdaq Stock Market.

Item 14. Principal Accountant Fees and Services

The following table summarizes the fees of PricewaterhouseCoopers LLP, our independent registered public accounting firm, for 2018 and 2017.

	Year Ended December 31,	
Fee Category	2018	2017
Audit fees [1]	$2,510,481	$1,113,568
Audit-related fees	—	—
Tax fees	—	—
All other fees [2]	62,771	161,819
Total fees	$2,573,252	$1,275,387

(1) Audit fees relate to professional services provided in connection with the audit of our annual consolidated financial statements, review of our quarterly consolidated financial statements and our public offerings. In 2018, audit fees also relate to the audit of internal control over financial reporting.

(2) All other fees include any fees billed that are not audit, audit related, or tax fees. In 2018 and 2017, these fees related primarily to professional services provided in connection with the review of internal controls, processes and related systems over financial reporting designed by management, in addition to fees related to accounting research software.

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PART IV

Item 15. Exhibits, Financial Statement Schedules

(a) The following documents are filed as part of this report:

(1) Financial Statements — The financial statements filed as part of this Annual Report on Form 10-K are listed on the Index to Consolidated Financial Statements in Item 8.

(2) Financial Statement Schedules — The financial statement schedules have been omitted because the information required to be set forth therein is not applicable or is shown in the financial statements or the notes thereto.

(3) Exhibits — The exhibits required by Item 601 of Regulation S-K are listed in paragraph (b) below.

(b) Exhibits

The exhibits listed on the Exhibit Index (following the Signatures section of this report) are filed herewith or are incorporated by reference to exhibits previously filed with the SEC.

Exhibit		Incorporated by Reference			
Number	Description	Form	Filing Date	Number	Filed Herewith
3.1	Amended and Restated Certificate of Incorporation of the Registrant.	10-Q	August 8, 2013	3.1	
3.2	Amended and Restated Bylaws of the Registrant.	10-Q	August 8, 2013	3.2	
4.1	Specimen Common Stock Certificate of the Registrant.	S-1/A	June 13, 2013	4.1	
4.2	Warrant to Purchase Common Stock issued to Lam Research Corporation.	8-K	August 8, 2017	4.1	
4.3	Form of Warrant to Purchase Common Stock dated as of October 12, 2018 is issued in connection with Amended and Restated Term Loan Agreement dated as of October 12, 2018 among the Registrant and certain of the Registrant's subsidiaries and CRG Partners III L.P., CRG Partners III-Parallel Fund “A” L.P., CRG Partners III Parallel Fund “B” (Cayman) L.P., CRG Partners III (Cayman) LEV AIV L.P. and CRG Partners III (Cayman) UNLEV AIV I L.P., and CRG Servicing LLC.				X
10.1	Form of Director and Executive Officer Indemnification Agreement.	S-1/A	June 13, 2013	10.1	
10.2+	2004 Stock Option Plan, as amended.	S-1	May 20, 2013	10.2	
10.3+	Form of Notice of Stock Option Grant and Stock Option Agreement under the 2004 Stock Option Plan, as amended.	S-1	May 20, 2013	10.3	
10.4+	Form of Notice of Stock Option Grant and Stock Option Agreement permitting early exercise under the 2004 Stock Option Plan, as amended.	S-1	May 20, 2013	10.4	
10.5+	2013 Equity Incentive Plan.	S-1/A	June 13, 2013	10.5	
10.6+	Form of Notice of Stock Option Grant and Stock Option Agreement under the 2013 Equity Incentive Plan.	S-1/A	June 13, 2013	10.6	
10.7+	Form of Notice of Restricted Stock Grant and Restricted Stock Agreement under the 2013 Equity Incentive Plan.	S-1/A	June 13, 2013	10.7	
10.8+	Form of Notice of Restricted Stock Unit Grant and Restricted Stock Unit Agreement under the 2013 Equity Incentive Plan.	S-1/A	June 13, 2013	10.8	
10.9+	2013 Employee Stock Purchase Plan.	S-1/A	June 13, 2013	10.9	
10.10+	2018 Inducement Equity Incentive Plan and related form agreements.	8-K		10.1	

January
16, 2018

Exhibit Number	Description	Incorporated by Reference			Filed Herewith
		Form	Filing Date	Exhibit	
10.11+	Employment Agreement, dated May 24, 2010, between the Registrant and R. Bradley Gray.	S-1	May 20, 2013	10.8	
10.12+	Amendment to Employment Agreement, dated August 4, 2017, between the Registrant and R. Bradley Gray.	10-Q	August 9, 2017	10.1	
10.13+	Employment Agreement, dated November 20, 2013, between the Registrant and David W. Ghesquiere.	10-K	March 11, 2016	10.12	
10.14+	Amendment to Employment Agreement, dated August 4, 2017, between the Registrant and David W. Ghesquiere.	10-Q	August 9, 2017	10.3	
10.15+	Employment Agreement, dated March 31, 2012, between the Registrant and Joseph Beechem.	S-1	January 13, 2014	10.12	
10.16+	Amendment to Employment Agreement, dated December 27, 2012, between the Registrant and Joseph Beechem.	10-K	March 7, 2018	10.17	
10.17+	Amendment to Employment Agreement, dated November 7, 2017, between the Registrant and Joseph Beechem.	10-K	March 7, 2018	10.18	
10.18+	Employment Agreement, dated October 17, 2017, between the Registrant and J. Chad Brown.	10-K	March 7, 2018	10.19	
10.19+	Employment Agreement, dated January 16, 2018, between the Registrant and K. Thomas Bailey.	10-K	March 7, 2018	10.20	
10.20+	Employment Agreement, dated June 8, 2009, between the Registrant and Mary Tedd Allen				X
10.21+	Amendment to Employment Agreement, dated December 28, 2012, between the Registrant and Mary Tedd Allen.				X
10.22+	Amendment to Employment Agreement, dated October 23, 2017, between the Registrant and Mary Tedd Allen.				X
10.23	Lease between the Registrant and BMR-530 Fairview Avenue LLC, dated October 19, 2007, as amended through December 22, 2014 (including Amendment No. 1 through Amendment No. 7).	10-K	March 13, 2015	10.14	
10.24	Amendment No. 8 to Lease between the Registrant and BMR-530 Fairview Avenue LLC, dated February 27, 2015.	10-K	March 11, 2016	10.13	
10.25	Lease between the Registrant and BMR-500 Fairview Avenue LLC, dated December 22, 2014.	10-K	March 13, 2015	10.15	
10.26	Amendment No. 1 to Lease between the Registrant and BMR-500 Fairview Avenue LLC, dated June 27, 2016.	10-Q	August 4, 2016	10.1	
10.27	Office Lease Agreement between the Registrant and Blume Roy Building LLC, dated December 26, 2013, as amended through November 18, 2014.	10-K	March 13, 2015	10.16	
10.28	Amendment No. 2 to Office Lease Agreement between the Registrant and Blume Roy Building LLC, dated February 1, 2016.	10-Q	May 6, 2016	10.1	
10.29†	Amended and Restated Term Loan Agreement dated as of October 12, 2018 among the Registrant and certain of the Registrant's subsidiaries and CRG Partners III L.P., CRG Partners III-Parallel Fund “A” L.P., CRG Partners III Parallel Fund “B” (Cayman) L.P., CRG Partners III (Cayman) LEV AIV L.P. and CRG Partners III (Cayman) UNLEV AIV I L.P., and CRG Servicing LLC.				X

Exhibit Number	Description	Incorporated by Reference			Filed Herewith
		Form	Filing Date	Exhibit	
10.30†	Exclusive License Agreement, dated February 4, 2004, between the Registrant and The Institute for Systems Biology.	S-1	May 20, 2013	10.19	
10.31†	Amendment No. 1 to Exclusive License Agreement, dated February 5, 2007, between the Registrant and The Institute for Systems Biology.	S-1	May 20, 2013	10.20	
10.32	Amendment No. 2 to Exclusive License Agreement, dated May 17, 2007, between the Registrant and The Institute for Systems Biology.	S-1	May 20, 2013	10.21	
10.33†	Amended and Restated Exclusive License Agreement, effective July 7, 2010, between the Registrant and Bioclassifier, LLC.	S-1	May 20, 2013	10.22	
10.34	First Amendment to Amended and Restated Exclusive License Agreement between the Company and Bioclassifier, LLC, dated March 31, 2015.	10-Q	May 11, 2015	10.1	
10.35	Amendment No. 2 to Amended and Restated Exclusive License Agreement between the Company and Bioclassifier, LLC, dated June 24, 2016.	10-Q	August 4, 2016	10.2	
10.36†	Third Amendment to Amended and Restated Exclusive License Agreement between the Company and Bioclassifier, LLC, dated July 18, 2018.	10-Q	November 8, 2018	10.1	
10.37†	Collaboration Agreement, dated August 4, 2017, between the Registrant and Lam Research Corporation.	10-Q	November 8, 2017	10.1	
10.38	Sales Agreement, dated as of January 5, 2018 between NanoString Technologies, Inc. and Cowen and Company, LLC.	10-K	March 7, 2018	1.1	
10.39†	Amended and Restated Loan and Security Agreement, dated as of November 16, 2018, by and between NanoString Technologies, Inc. and Silicon Valley Bank.				X
21.1	List of subsidiaries of the Registrant.	10-K	March 7, 2018	21.1	
23.1	Consent of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm.				X
24.1	Powers of Attorney (contained on signature page).				X
31.1	Certification of Principal Executive Officer Required Under Rules 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.				X
31.2	Certification of Principal Financial Officer Required Under Rules 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.				X
32.1	Certification of Principal Executive Officer Required Under Rule 13a-14(b) of the Securities Exchange Act of 1934, as				X

	amended, and 18 U.S.C. §1350.	
32.2	Certification of Principal Financial Officer Required Under Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. §1350.	X
101.INS	XBRL Instance Document.	X
101.SCH	XBRL Taxonomy Extension Schema Document.	X
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document.	X

Exhibit Number	Description	Incorporated by Reference Form	Filing Date	Number	Filed Herewith
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document.				X
101.LAB	XBRL Taxonomy Extension Label Linkbase Document				X
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document.				X

+ Indicates a management contract or compensatory plan.

‡ Confidential treatment has been requested with respect to certain portions of this exhibit. Omitted portions have been filed separately with the Securities and Exchange Commission.

Item 16. Form 10-K Summary

Not applicable.

SIGNATURES

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

Dated: March 11, 2019

NANOSTRING TECHNOLOGIES, INC.

By: /s/ R. Bradley Gray
R. Bradley Gray
President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints R. Bradley Gray and K. Thomas Bailey, and each of them, with full power of substitution and resubstitution and full power to act without the other, as his or her true and lawful attorney-in-fact and agent to act in his or her name, place and stead and to execute in the name and on behalf of each person, individually and in each capacity stated below, and to file, any and all documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing, ratifying and confirming all that said attorneys-in-fact and agents or any of them or their and his or her substitute or substitutes, may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Act of 1934, this Annual Report on Form 10-K has been signed by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ R. Bradley Gray R. Bradley Gray	President, Chief Executive Officer and Director (Principal Executive Officer)	March 11, 2019
/s/ K. Thomas Bailey K. Thomas Bailey	Chief Financial Officer (Principal Accounting and Financial Officer)	March 11, 2019
/s/ William D. Young William D. Young	Chairman of the Board of Directors	March 11, 2019
/s/ Elisha W. Finney Elisha W. Finney	Director	March 11, 2019
/s/ Nicholas Galakatos Nicholas Galakatos	Director	March 11, 2019
/s/ Robert M. Hershberg Robert M. Hershberg	Director	March 11, 2019
/s/ Kirk D. Malloy Kirk D. Malloy	Director	March 11, 2019
/s/ Gregory Norden Gregory Norden	Director	March 11, 2019
/s/ Charles P. Waite Charles P. Waite	Director	March 11, 2019